96-157

# USE OF COST-BENEFIT ANALYSIS BY REGULATORY AGENCIES

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## JOINT HEARINGS

BEFORE THE

SUBCOMMITTEE ON
OVERSIGHT AND INVESTIGATIONS

AND THE

SUBCOMMITTEE ON CONSUMER PROTECTION
AND FINANCE

OF THE

COMMITTEE ON
INTERSTATE AND FOREIGN COMMERCE
HOUSE OF REPRESENTATIVES

NINETY-SIXTH CONGRESS

FIRST SESSION

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JULY 30, OCTOBER 10, AND 24, 1979

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**Serial No. 96–157**

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Committee on Interstate and Foreign Commerce

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# USE OF COST-BENEFIT ANALYSIS BY REGULATORY AGENCIES

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## MONDAY, JULY 30, 1979

House of Representatives, Subcommittee on Oversight and Investigations, and Subcommittee on Consumer Protection and Finance, Committee on Interstate and Foreign Commerce,

*Washington, D.C.*

The subcommittees met, pursuant to notice, at 10:30 a.m., in room 2123, Rayburn House Office Building, Hon. Bob Eckhardt, chairman of the Oversight and Investigations Subcommittee, and Hon. James H. Scheuer, chairman of the Consumer Protection and Finance subcommittee, presiding.

Mr. **Eckhardt.** The meeting of the two subcommittees will commence.

Ladies and gentlemen, today the Subcommittee on Oversight and Investigations and the Subcommittee on Consumer Protection and Finance begin the first in a series of hearings on the use and abuse of cost-benefit analysis by regulatory agencies.

The idea of measuring the costs and the benefits of a particular project as a matter of public policy is not a new one. As far back as the 19th century, the Federal Government used this type of analysis for evaluating public works projects. During the 1960's, this tool was refined further by the Defense Department as a means of evaluating alternative weapons systems. In both these cases, the central focus was to improve the efficiency of Federal expenditures.

Its application to regulatory decisionmaking is of much more recent vintage. In 1974, President Ford issued an Executive order requiring all regulatory agencies within the purview of the executive branch to evaluate the impacts of their actions on inflation. The Council on Wage and Price Stability was created by Congress and given responsibility for overseeing Federal inflation-fighting efforts.

Together with the Office of Management and Budget, that agency determined that regulations should be viewed as inflationary if the cost of regulatory decisions exceeded the benefits. Accordingly, executive-based regulatory agencies were required by Executive order to perform a cost-benefit analysis of all major rules and to publish such "inflationary impact analyses" for public comment as part of their rulemaking procedure. Just prior to leaving office in January of 1977, President Ford reissued the Executive order changing only the title of the required documents to "economic impact analyses." President Carter continued his predecessor's policy refining the parameters somewhat and, in March of

1978, issued a new Executive order renaming the requisite documents "regulatory analyses." He also created the Regulatory Analysis Review Group chaired by a member of the Council on Economic Advisors, with COWPS and OMB having permanent representation.

The council on wage and price stability still provides staff support for the regulatory analysis review group. All rules and regulations issued by executive agencies with potential cost impacts in excess of $100 million must be subjected to this formal analysis. Any Federal department or agency whose regulatory analysis is chosen for review participates in the review process.

Clearly, the regulatory process must be made more effective. Today, millions of Federal dollars are being spent not only for the development of regulations but for the preparation, refining, and defending of the formal regulatory analyses. Bills are pending in both houses of Congress that would extend the regulatory analysis requirement to independent agencies and require that all regulatory agencies submit all major rules to such analysis at least once every 10 years. It is obvious that a thorough review of the use of cost-benefit analysis as a regulatory tool is in order. Cost-benefit analysis as it is used here is a generic term which would include similar tools such as cost-effectiveness analysis and risk-benefit analysis.

To begin this series of hearings, the subcommittee will hear from a panel of academicians who have differing views on the proper role of cost-benefit analysis in regulatory decisionmaking. We will hear presentations from each member of the panel not to exceed 10 minutes. After all witnesses have been heard, we will allow up to 5 minutes for each to respond to the other papers presented.

We will hear from these witnesses as they are called on. I would like to say, however, that I have always found it most useful in hearings before this committee to have a rather free-flowing discussion at the witness table. I would also hope that we might be able to conduct this somewhat informally up here so that my colleagues would participate by interruption or by discussion in connection with the total discussion at the table.

Mr. SCHEUER. Have no fear, Mr. Chairman.

Mr. ECKHARDT. I may say that, as far as the Chair is concerned, I would hope that my colleagues would simply ask a question, get a response, and then perhaps argue the matter a bit but not feel that they have to occupy their time then or they will lose it. That, I think, tends to hurt our discussion.

I wonder if my colleague, who is jointly chairing this meeting with me, Congressman Scheuer, would like to make an opening statement at this time.

Mr. SCHEUER. Mr. Chairman, I would just say briefly, as the old cliche would have it, there is no army on Earth as powerful as an idea whose time has come.

The idea whose time has come today is the idea that the regulators have to live within the same budget constraints, the same constraints of reasonableness, the same constraints of commonsense, the same constraints of a logical payoff for regulatory activities as the rest of us observe generally in our daily lives.

For a generation or more, the regulators have proceeded to regulate—regulate on health, regulate on environment, regulate on safety, regulate on all kinds of transportation—trucking, railroads, airlines—and other things. We want them to regulate in terms of health, safety, environment. We want them to maintain a free market.

We want them to do so in a commonsense sort of way. Most of the time, they have. They have served us well.

But there have been instances of the regulatory process seemingly gone berserk. There have been instances where the regulatory process has sort of orbited into space in an orbit of its own, beyond the reach of gravity, totally beyond the reach of the Congress of the United States—who delegated its powers in the first place.

Times in which they have regulated seemingly without consideration of the cost that would be imposed on society and ultimately on the consumer as a result of their regulations. They seem to develop in many cases a tunnel vision and a myopia that defied all logic and defied all commonsense.

This is not the majority of decisionmakers. This is not the majority of the regulators. But it is a significant-enough sampling of their product over the past generation that it has deeply concerned the public and deeply concerned the business community and deeply concerned very many members of Congress. I would say a majority of Congress feels that we have to rein in the aberrational and feels that we have to create procedures in Congress that make regulators more responsive and more reasonable.

I am concerned about costs and benefits. That is the first time I have used that phrase. What we are really talking about is commonsense in the regulatory process.

Perhaps 10 or 20 years ago, our economy was so rich, so abundant, so productive, so competitive in the production of goods and services for sale at home here and abroad that we did not have to worry about some inefficiencies being imposed on the economy. But today we have a far different situation. Our economy is in a state of desperate need for more productivity, for more efficiency, for more competitiveness.

We are in a recession. We lack adequate competitiveness around the world. We are in a state of inflation.

Undoubtedly, there are a number of conditions that produce this. Some elements of the regulatory process may be a contributor.

We have to look at regulatory processes. This is the purpose of this set of hearings.

We have reported out a bill out of the Consumer Protection and Finance Subcommittee that does have a legislative veto. I think it is one that the regulators can live with.

We are at the end of an era when the regulators are going to regulate unfettered by anybody breathing down their necks—looking down at the printed page and examining what they have done. If there is a time of nonresponsibility of the regulators to the public and to the Congress, it is at an end.

The question is not whether we impose some kind of discipline on the regulators but how. We do not want to jettison the regulatory process. We are not about to pour the baby down the sink with the bath water. We want intelligent regulations that will protect our health, will protect our safety, will protect our environment, will protect and enhance a productive, competitive economy. The question is how we do that and how we concentrate the minds in the regulatory agencies to produce regulations based on commonsense and practical judgments.

I apologize for having used the word "cost-benefit" or "risk-benefit." We are going to hear a lot about that. What all of that jargon about cost-benefit analysis, risk-benefit analysis means is, how do we try to institutionalize commonsense and good judgment and produce some kind of intelligent review process so that Congress finally has a hand in the ultimate product? This is what we are about.

I congratulate my colleague, Bob Eckhardt, for his forthcoming and active participation in putting these hearings together. I want to thank his staff members for the enormous help that they have provided. I very much look forward to hearing the witnesses, so let's get on with the hearing.

Mr. **Eckhardt**. Mr. Lent?

Mr. **Lent**. Thank you, Mr. Chairman.

I want to congratulate my colleague from New York on his statement. It somewhat shortens the length of my statement because he made many of the Republican principles that I think are so important.

As a Republican, I am not unmindful of the fact that a substantial degree of Government intervention is to be expected in a complex modern society. However, given the large amount of resources devoted to government regulation, I believe that the time has come for a serious accounting of the impact of this regulation on American life.

The cost of this regulation hits the citizen in his capacity as both a taxpayer and as a consumer. Its cost adds to inflation and significantly cuts back on the amount of disposable income every American earns.

Much criticism has been leveled at the use of cost-benefit analysis as a tool in regulatory decisionmaking. I do not dispute much of what these critics say. It is an imperfect science. However, given that this is a Nation of limited resources, I strongly believe some guidelines are imperative if we are to make rational regulatory and spending decisions. Even though it is an imperfect science, I know of no other available alternative to assist us in finding acceptable balances among conflicting societal goals.

I believe that we should accept cost-benefit analysis as a valuable tool which can assist us in making rational, informed legislative and regulatory decisions. In addition, I believe every effort should be made to improve existing cost-benefit methodology to increase its reliability.

It is my hope that this series of hearings will provide us with a comprehensive, balanced record on the subject of cost-benefit analysis, including specific suggestions for ways to improve analytical methodology.

Thank you, Mr. Chairman.

Mr. **Eckhardt**. Dr. Lester Lave, Dr. Baruch Fischhoff, Dr. Robert Crandall, and Dr. Nick Ashford, please come forward at this time.

Gentlemen, it has been the custom of our committee to swear in all witnesses, even if you are stating, I suppose, rather broad opinions. It is a little unnecessary here, but we will follow the custom of the committee.

Do you swear to tell the truth, the whole truth, and nothing but the truth, so help you God?

Mr. CRANDALL. I do.

Dr. LAVE. I do.

Dr. ASHFORD. I do.

Mr. FISCHHOFF. I do.

Mr. ECKHARDT. We will here first from Dr. Lester Lave, Professor of Economics at Carnegie-Mellon University and a senior fellow at the Brookings Institution. Among Dr. Lave's notable achievements in this field was the coauthoring of a major study on the cost and benefits of the regulation of stationary sources of air pollution. He has also been employed as a consultant to the Occupational Safety and Health Administration.

Dr. Lave will provide the subcommittee with a brief explanation of what professionals mean by "cost-benefit analysis" and the major variants thereof. He will be allocated an additional 3 minutes at the beginning of his presentation for that purpose.

## TESTIMONY OF LESTER B. LAVE, PH. D., SENIOR FELLOW, BROOKINGS INSTITUTION, AND PROFESSOR OF ECONOMICS, CARNEGIE-MELLON UNIVERSITY; BARUCH FISCHHOFF, DECISION RESEARCH, EUGENE, OREG.; ROBERT W. CRANDALL, SENIOR FELLOW, BROOKINGS INSTITUTION; AND NICHOLAS A. ASHFORD, PH. D., J.D., ASSISTANT DIRECTOR, CENTER FOR POLICY ALTERNATIVES, MASSACHUSETTS INSTITUTE OF TECHNOLOGY

Dr. LAVE. Thank you, sir.

I was reminded, when Mr. Scheuer was giving his opening statement, that even space craft in their own orbits sometimes come unexpectedly crashing down. I think that the analogy here is apt since, in setting up regulations in the past without any real guidance in terms of economic effects of them, that there are irrepressible questions which arise. Those irrepressible questions were mentioned in the course of current legislation which is being considered.

I think that it is Congress that created these agencies, and it is Congress now that is using its oversight power. I welcome that. I might say that perhaps, even a few years earlier, that oversight might have been exercised.

There are five general frameworks that I would like to talk about. They go from a no-risk framework all the way to a formal benefit-cost framework. Let me define these very briefly. I think they are the range of current proposals for guiding regulation.

The first, no risk framework, is based on the Delaney clause to the Food, Drug, and Cosmetic Act. It says that no carcinogen shall be added to any food. The general philosophy behind this is that the public shall be exposed to no unnecessary risks. So, the only question is whether something is a risk, at which point it is prohibited. In the Delaney clause that is rather specific with respect to carcinogens as food additives, but certainly that concept can be generalized. I would like to argue that the Congress did generalize it in, for example, the 1970 amendments to the Clean Air Act and in several other acts around.

A second framework that has been proposed by the FDA is a sort of risk-risk analysis. This comes specifically if we are talking about food additives and specifically for the use of sodium nitrite as a food additive. The FDA concluded that sodium nitrite was a carcinogen and, therefore, the Delaney clause requires that it be banned from food.

Unfortunately, sodium nitrite also protects against botulism; so, the effect of banning it would be to save some people from cancer. The effect of banning it would also be to condemn some people to death from botulism. What the FDA proposed to do was to, instead of doing this knee-jerk reaction to it being a carcinogen and therefore banning it, try and take a look at the total effects on the consumer.

That is, if you were to kill more people from botulism than you were to save from cancer, then banning sodium nitrite would not be in the best interests of public health. So, they proposed to balance the risks of one against the risks of the other. So, risk-risk analysis is the second such framework.

The third, which has been bandied around a bit and I think is included in several bills around, is sort of an informal benefit-cost analysis. It attempts to look at all the effects and to do some generalized kinds of balancing without being terribly compulsive about quantifying anything or facing up to the very difficult questions such as: what is the value of a human life, or how much of today's consumption should we be willing to trade off for protecting our grandchildren.

There are several problems with this informal benefit-cost analysis. I hope that we can get a little bit more elaboration on this in a minute.

I think that, in terms of the regulatory agencies, it does not provide an adequate framework. There are a couple of extreme problems with it. Let me just talk to them for a bit.

Since they are not very compulsive about what are nontrivial effects and how it is that you evaluate these, the agency would have no basis to ever shut off a hearing. That is, anybody who wanted to come in and testify about something they deem to be relevant would have to be included in the record. So, one way that a company, for example, could get around this sort of regulation would be to extend the hearing indefinitely, as for example, occurred with the FDA in the famous case on peanut butter, where you tried to see what proportion of peanut butter had to be made up of peanuts.

You could actually hold one of these hearings and go on for several decades. In the meantime, the question would have become moot.

The second sort of problem is that, even if you did manage to conclude the hearing, the agency would have no particular basis to decide how to weigh the effects, one against the other, without something more systematic than a vague injunction to look at the benefits and costs. I am afraid that, as a general guideline to action, this one has more costs than benefits.

A fourth sort of framework which has been bandied about and is, again, included in some of the legislation is the regulatory budget. Here, as I understand it, one would ask each agency to live within two budgets. One is the internal budget that is your primary jurisdiction, where the agency would ask for funds for its own internal staff and studies and so on. The second would be sort of an external budget or an implementation budget. Under that, they would have to live within that sort of budget for the total cost they would be imposing on the economy.

For example, the EPA could have an internal budget of $5 billion and an external budget of $20 billion. Internally, they would have to live with whatever that amount of money is. Externally, they could not impose more costs on the economy than that much.

I must say, this is a framework that I think has a lot of things going for it. There are all kinds of problems in implementing it, but I think that there are lots of benefits as well.

The fifth framework is one of formal benefit-cost analysis. This is the one that economists have dealt with at some length. It involves a number of steps. Let me go through them very briefly.

The first is that one has to enumerate all of the various effects that are associated with some proposed action. For example, if you were talking about abating air pollution, those effects would include the kinds of control devices you put on smokestacks, any possible unemployment that might result, any increases in prices, and so on.

The second would be to classify each one as some sort of benefit or cost.

The third would be to relate each quantitatively to the scope of the action. For example, if the action, again, is to lessen air pollution, one would have to look at to what extent ambient air quality is improved by the regulations and then to what extent human health is improved by increases in ambient air quality.

The fourth would then be to try and take these very diverse effects and translate them into some common metric. I am an economist. The common metric I prefer is dollars, although any other common metric is just as good. However, the difficulty in trying to get some common metric is the one of, inevitably, trying to figure out, for example, how it is you translate increases in life expectancy or decreases in illness into dollar terms.

The penultimate step is one of taking effects which occur over time and bringing them back to some common period since, obviously, in an inflationary world, a dollar today is worth more than a dollar next year. Finally, one would go about doing the comparison of benefits and costs.

The whole framework has been set out rather nicely by economists. I think that there is quite general agreement as to, theoretically, how one takes each one of these steps. I think there is less agreement in practice as to exactly the parameters to be used, for example, in valuing human life.

Let me say a bit more about some of the difficulties and then conclude.

The no-risk analysis, as exemplified by the Delaney clause, has major difficulties associated with it. For example, the Food and Drug Administration itself found the Delaney clause inadequate in dealing with sodium nitrite. I think the Congress found the framework inadequate in dealing with saccharin.

It is all very well to state with glowing rhetoric what it is one is going to do for people. I think that that glowing rhetoric has to be tempered a great deal of the time with some notion as to what are the effects. One cannot protect all of the people all of the time.

So, some sort of quantification is necessary. These other frameworks that I have enumerated all have something to add over cost-benefit analysis. They each represent an improvement. The only case in which they do not represent an improvement is when so little is known about this effect that one simply cannot do any sort of analysis or quantification.

One might well ask in that situation whether there can conceivably be any regulation. So, aside from this extreme case of nothing being known, then at least one of these frameworks will add to the no-risk framework. And the choice of framework is then dependent on how much information one has and how thoroughly one is willing to look at the various kinds of problems.

There are real difficulties that arise in benefit-cost analysis and the other frameworks. Those real difficulties are an inherent part of the problem. They are not simply something conjured up by your analysts who then cannot find ways of solving them. They are just inherently part of the difficulties.

I at least think it is better to face those difficulties square on than to try and sweep them under the rug. That means that I have a marked preference for either the regulatory budget or the formal benefit-cost analysis. I think that in many cases the formal benefit-cost analysis is really a little bit too difficult to apply. So, I tend to favor the regulatory budget more.

I want to conclude by saying that it is extremely difficult to make informed decisions about health, safety, and environmental issues, but we cannot allow society to be maimed or paralyzed by our reluctance to confront difficult problems.

[Testimony resumes on p. 23.]

[Dr. Lave's prepared statement follows:]

# TESTIMONY BEFORE THE

# SUBCOMMITTEE ON OVERSIGHT AND INVESTIGATIONS

# and

# SUBCOMMITTEE ON CONSUMER PROTECTION AND FINANCE

Lester B. Lave*

July 30, 1979

## I. INTRODUCTION

Regulation of health, safety and the environment cannot be arbitrary and capricious. The United States is a nation governed by laws with judicial review of the laws and, more importantly, of the decisions of independent regulatory agencies. Thus the Congress must provide guidance to the regulatory agencies in the form of goals and a framework for decision-making. The agencies have the task of making both operational, under judicial review and Congressional oversight.

Five regulatory frameworks are in current use or have been proposed: (1) no risk, (2) risk-risk, (3) risk-benefit, (4) regulatory budget, and (5) formal benefit-cost analysis. These frameworks are arrayed in terms of the amount of knowledge and analysis required to implement each, although there is a qualitative difference between the first and the others.

---

*The author is a senior fellow at the Brookings Institution and professor of economics at the Carnegie-Mellon University. The views expressed here are those of the author and not necessarily those of the trustees, officers, or other staff members of the Brookings Institution and Carnegie-Mellon University.

The no-risk framework is exemplified by the Delaney Amendment to the Food, Drug and Cosmetics Act. To implement the framework, the FDA need merely conclude that there is scientific evidence that a substance is a human carcinogen. Once the scientific question is settled, the framework gives the FDA no discretion in its actions. No other aspects, not costs or disruptions, can be considered. This lack of discretion has led to the current controversies concerning saccharin and the use of sodium nitrite in preserving cured meats.

Finding the Delaney Clause unsatisfactory in regulating nitrite, the FDA proposed that a risk-risk framework be adopted. Nitrite confers health benefits on consumers by protecting them from botulism; one would not want to save a small number of consumers from cancer at the cost of having many die from botulism. Thus this framework attempts to balance the risks associated with consuming a substance against the risks associated with not consuming the substance.

Risk-benefit analysis is a loosely defined concept, rather than an analytical framework. The notion is one of weighing the risks associated with some action against the general benefits conferred by that action. Since there are no formal definitions of what aspects should be considered in either the risks or benefits category, I define this procedure to be an informal version of benefit-cost analysis for decisions involving risk; the agency attempts to consider all effects of an action and somehow to balance the beneficial aspects against the undesired ones.

The regulatory budget is a variation of the notion of cost-effectiveness analysis. The notion is that each agency would be given an implementation budget, as well as its conventional budget. The latter would be used to hire staff, let contracts and support the usual functions of the agency. The former would consist of the total costs that could be imposed on all those having to implement the proposed regulations. For example, the EPA might be instructed to clean the environment as much as possible for a regulatory budget of $20 billion per year. If so, the EPA would attempt to set priorities among all possible regulatory actions so as to get the greatest amount of environmental cleanup for this level of implementation cost.

Formal benefit-cost analysis is the most inclusive of these frameworks, requiring the most data and analysis. It begins with the identification of all nontrivial effects that would result from a regulatory decision. These effects would be categorized as benefits (desirable effects) or costs (undesirable effects); each would be related quantitatively to the proposed action, e.g., the number of lives that would be saved as a result of abating sulfur oxide emissions. The various effects then have to be translated into a common metric, generally dollars of a given year; this requires putting values on effects that are not bought and sold in the market place, e.g., an extra year of life. It also requires making commensurate effects that occur at various periods of time, usually by applying a social rate of discount. Finally, one can sum all of the desired effects and compare them to the sum of undesired effects to see if benefits exceed costs.

In comparing these frameworks for regulatory decisionmaking, two principal questions must be addressed: (1) How much nonroutine data and analysis are required to implement each framework? (2) Is this framework of potential help in making regulatory decisions? If quantitative analysis is to play a major role in government decision making, it must be routinized, with reasonably well defined procedures and data use. If each new application requires solving new theoretical issues or creativity in applying the frameworks, the framework cannot be a foundation for regulatory analysis.

The second question recognizes that quantitative analysis is not sufficient for decision-making. Many factors that are crucial to decisions are not quantified in the analyses, such as distributional issues and individual freedom. Does having quantitative analysis as one input to decision making enlighten the decision by properly quantifying and valuing important aspects of the issue? Are important aspects not quantified? If so, the decision must be biased. One example is being able to quantify the costs of a program in detail but being unable to quantify any of its significant benefits. Finally, there is the overall question of whether the results of the analysis are basically sensible.

## II. FRAMEWORKS FOR ANALYSIS

Quantitative analysis begins with an enumeration of the effects of some proposed project or regulation. In benefit-cost analysis this listing is meant to be encyclopedic, encompassing all effects that are nontrivial; in other frameworks, a narrower purview is adopted. The second step is to relate the level of effect to the scope of the project or regulation, e.g., relate the cost of the project to its scope or relate the decrease in number of people dying to improvements in air quality.

The information gleaned in these first two stages is interesting in itself and should always be presented in the results of the analysis. One framework (the sort of "effects" or "risk" analysis used in CONAES) chooses to stop at this point, assuming that any further aggregation and analysis will be so controversial as to be dysfunctional, or at least irrelevant. However, this means that the results of the analysis will consist of many disparate effects, e.g., the effects of abating sulfur oxides air pollution would be described in terms of the number of tons of steel, manhours for construction and maintenance, various other materials and land needed for abatement and the benefits would be described by estimated effects on disease and mortality rates, on visibility, odors, plants, animals, etc. Perhaps some people can make sense out of this laundry list, but it is certainly not readily reduced to sense.

All the other frameworks go on to at least partially aggregate effects into categories, finding some sort of common metric. Thus, the inputs required to construct a project are aggregated by finding the cost of purchasing each in the market. However, as the example demonstrates, this step is not without controversy. If land already belongs to the government or would be acquired by immenient domain, if crop lands would be flooded or wilderness area or reaction areas disturbed, the market value of the land is unknown and may not be deemed by society to represent the social cost of taking the land. People may even feel that the price ought to depend on the use, e.g., park or open sewer. Furthermore, there is a sort of grisly calculus in aggregating the undesired effects of an action. For example, a worsening of air pollution is estimated to increase the number of illnesses, the number of sick days, the amount of disability, and the mortality rate. Finding a metric to make disabilities and premature deaths comparable so they can be aggregated into a health effects category is inherently difficult.

Risk-benefit and cost-effectiveness (regulatory budget) analysis stop at this point. The former framework attempts to place an estimate of the risks (to health) associated with a project on one side of the scale and the estimated benefits of the project on the other. The cost of the project is neglected, as are other types of risk, such as the danger of exterminating a species of plant or animal. Cost effectiveness analysis attempts to estimate the benefit per dollar of cost for all possible projects so as to choose the one(s) giving "the most bang for the buck," the greatest level of benefit per dollar expended.

Risk-benefit analysis runs afoul of two conundrums. There is no unique measure of risk. For example, a risk averse person will not perceive the expected value of a distribution to be a fair representation of the level of risk. Thus, collapsing the distributions of the probability of loss and the magnitude of loss into an expected value is unsatisfactory. There is no accepted method to get a scalar measure of risk across different projects. Risks are stated in complicated terms encompassing high probability or routine risks versus low probability risks. Should every risk with a non-zero probability be considered explicitly?

The second conundrum is the difficulty of estimating benefits. For example, what is the benefit to the nation of abundant, inexpensive power? It would be fair to say that there is no accepted theory of risk-benefit analysis which specifies how it is to be done and what are the resource allocation properties of the solution.

If the risks are aggregated, costs are included, benefits are estimated, and the information is arrayed so that the benefits per unit of cost or risk are estimated, risk-benefit analysis is transformed into cost-effectiveness analysis. The basic assumption is that it is not currently possible to translate costs and benefits into comparable units; thus, the problem is set up as a constrained optimization, where the greatest benefits are sought for a given level of expenditure (or of risk).

Benefit-cost analysis assumes that all effects can be translated into the same metric. Thus, rather than ending with estimates of the risk-benefit ratio or benefit per dollar of expenditure per project, the analysis produces an estimate of the relationship of benefits to costs or of the internal rate of return to invested capital. Being the most comprehensive of the frameworks, benefit-cost analysis is the focus of the criticism of quantitative analysis. However, the major problems are common to all of these frameworks.

There is a residual group of frameworks for quantitative analysis. The most widely used method is capital budgeting, used by the private sector to help with investment decisions. Properly applied, capital budgeting is equivalent to benefit-cost analysis, although with the fillip of having a complicated supply schedule for capital (with the cost of capital getting progressively higher). It is also easier to apply in that only effects significant to the organization contemplating the investment are accounted for; more general social effects are neglected.

Variations on the theme of impact statements are widely used in government project evaluations. Beginning with environmental impact statements, the requirement has spread to inflationary impact statements, etc. These frameworks stress only a narrow aspect of the projected project, and then attempt to quantify the effect of that area. However, there is no theory of how to make these assessments or even of what constitutes a nontrivial impact. Thus, these analyses have been of almost no use to decision makers, and are merely conceived of as exercise to delay or block implementation of a project. Neither the capital budgeting or impact framework will be considered further.

## III. METHODOLOGICAL ISSUES

In applying these frameworks, a series of concerns are ubiquitious; they relate to the ability to do quantitative analysis at all, and if so, to the desirability of attempting to apply the more general framework. I begin with the general issues applying to all frameworks and then go onto the more specific issues.

The first step is enumeration of the effects of a project or regulation. This seemingly trivial step has often led to difficulties. For example, the Army Corps of Engineers has been doing benefit-cost analysis of waterway projects since the 1930s; environmental effects were not considered until the late 1960s. But not all effects can be listed. Since the world is interdependent, one action will eventually have ripple effects throughout a wide range of phenomena. Insisting on listing all effects would require a near infinite list. Instead, trivial effects must be excluded. But, which effects are trivial is the heart of the controversy. The Corps believed that environmental effects were trivial until the late 1960s. Most people would think that threatening extinction of an obscure and not very desirable type of plant would be a trivial effect, but a vocal minority disagrees emphatically.

The greatest difficulty in applying quantitative frameworks is in the quantification of effects. Some effects cannot be quantified with current techniques. There is a Gresham's law of decision making: quantified effects tend to dominate consideration, even if the unquantified effects are believed to be more important. Thus, quantification is likely to be pernicious if important aspects are left unquantified, if the quantification isn't evenhanded for benefits and costs, or if the quantification is inadequate.

The first problem can be alleviated in part by educating decision makers about the bias. Important aspects are certain to be quantified and so these frameworks will be helpful to decision makers only if they are educated about the nature of the biases and the ways in which quantification has been done. A particular problem is the universal quantification of costs, and absence of, or inadequate, estimation of benefits. For many regulatory programs, this lopsided quantification means that the costs are calculated in detail and benefits are alluded to in only a vague fashion. All benefit-cost, and other quantitative, analysis will be unable to quantify effects which are important or of potential importance. There is no alternative to education of decision-makers about this problem.

Having to estimate the quantitative relationship between the effects and scope of a project means that data must be collected and analyzed. For some effects, such as the cost of building some structure, techniques for quantifying the effect are well defined, accepted, and involve little controversy; the data are readily available and the techniques for collected are well defined. At the opposite extreme are health effects, where data are difficult to gather, privacy issues arise, estimation of effects is difficult, and the area is less well defined and fraught with controversy.

To collect good data and to perform meaningful analyses requires a modium of understanding of the underlying theory of the effect. Without this understanding, the data and analysis can merely present empirical regularities. However, mechanisms, such as the effects of long term exposure to low levels of some toxic substance, are not understood very well. Thus, the effects of long term exposures are one extreme instance of a class of effects where it is extremely difficult to specify precisely what data ought to be collected and how it ought to be analyzed.

Even when one knows what what data to collect, it is often difficult to get it. For example, my research needs data on the quantities of various air pollutants breathed by an individual over his lifetime, with analyses about the size of the particulates and their composition, the form of the sulfur and nitrogen oxides. These data re difficult to obtain both because of measurement problems and because of the time span involved. Typically, available data are only a remote approximation to what is desired.

Rarely does theory or knowledge of the underlying mechanisms result in a sharp hypothesis to be tested. Instead, only vague statements of possible relationships are possible. This puts a premium on robust estimation procedures, rather than ones that have spurious power based on rather arbitrary assumptions.

This triple set of problems, consisting of only vague knowledge of the theory or underlying mechanisms, poor data, and imprecise estimates, almost inevitably gives rise to the charge that a statistically significant relationships is not indication of a cause and effect relationship. Even where one can rule out the possibility of reverse causation (increased mortality causes air pollution) and of this relationship happening by chance, there remains the possibility of spurious correlation, i.e., the existence of some other factor or set of factors which causes the observed association. The less is known about theory and the more vague are the data, the more doubt scientists will have about whether the observed association is a causal one.

This problem of spurious correlation also extends to the estimation of the quantitative effect. If other factors known to effect the phenomenon being explored are missing from the analysis, and if they are correlated with the factors being analyzed, the latter will have biased parameter estimates.

A special case of the general notion that some effects are easier to quantify than others is the general case of costs versus health benefits. There are well established methods of estimating the former, and it is extremely difficult to estimate the latter. As a result, analysts tend to estimate costs to be somewhat higher than they would actually expect, since their estimates take no account of technological change or economies of scale. At the same time, the controversy surrounding the estimation of benefits leads to choosing a "conservative" value, one below the median effect. A thoughtful analyst would quantify benefits and costs in this fashion, with a resulting upward bias in estimated costs and a downward bias in estimated benefits. Thus, this type of uncertainty will tend to lead to the rejection of good programs, i.e., the estimated benefits will be less than estimated costs for programs for which the true benefits are greater than the true costs.

Two issues have occupied much of the economic literature on benefit-cost analysis: the valuation of nontraded goods and services and the social rate of discount. Where some good is regularly bought and sold in the market and one can expect to be able to purchase the needed quantity without rising price, valuation is simple. But, where the good is not regularly traded, such a premature death or severe injury, valuation is difficult and fraught with controversy. Four options are possible in such cases. First one can refuse to value these effects and instead go to a cost-effectiveness framework. Second, one can adopt entirely subjective judgments and produce an analysis that is likely to be helpful only to the people making the judgments. Third, one can atempt to find some traded good which is very similar to that which is untraded. For example, in choosing their occupation, sports, and other activities, people are implicitly equating dollars and premature death. Fourth, one can attempt to get people to think about the issue and rely on their stated judgments. This area is controversial and there is little resolution of the proper way of valuing such untraded effects, particulary where emotion enters, as with health.

When effects accrue over a period of time, something must be done to make them commensurate in time. This is done by choosing a discount rate (not necessarily constant over time). Unlike the previous issue, economists have managed to resolve the theoretical issue as to what discount rate to use: the opportunty cost of the funds invested in the project. However, there is less agreement as to the precise numerical value to use, since this depends in part on expectations concerning the future.

These issues affect not only the way that analysis is conducted, but also the framework to be chosen for analysis. For example, if one decided that untraded effects couldn't be valued, cost-benefit analysis would be ruled out. Indeed, one might decide that quantification wasn't possible at all in a particular case and all these frameworks would be ruled out.

## IV. CONCLUSIONS

The no-risk framework leads to large, visible inefficiencies. It is preferred only if the data and theory are so inadequate that no quantification is possible. While they are difficult to implement and inherently controversial, the various quantitative frameworks are to be preferred. The controversy stems from confronting directly the issues inherent in the decisions. Other frameworks resolve the difficult by refusing to recognize these controversial issues.

But these quantitative frameworks can only be as good as the data, theory and quality of the analysis; the resulting decisions can only be as good as decison-makers's understanding of the problems, the frameworks, and the nature of assumptions and unquantified aspects of the problem. It is difficult to make informed decisions about health, safety, and environmental issues. But we cannot allow society to be maimed or paralyzed by our reluctance to confront difficult problems.

Mr. ECKHARDT. We will now here from Dr. Baruch Fischhoff of Decision Research, Eugene, Oreg. Dr. Fischhoff is an expert on the decision theory and particularly the bahavioral implications of the use of various decision tools.

## TESTIMONY OF BARUCH FISCHHOFF

Mr. FISCHHOFF. Thank you.

When contemplating a new dam, factory, or regulation, it is natural to ask, "Is this project more trouble than it's worth?" Cost-benefit analysis formalizes this question as, "Do its expected costs outweight its expected benefits?" It provides the answer by, (*a*) enumerating all possible consequences, both good and bad; (*b*) assessing the likelihood that each will come to pass; (*c*) estimating the benefit or cost should that happen; and, (*d*) combining these figures with a formula that weighs consequences according to their likelihood of happening.

Although based upon an appealing premise and supported by a sophisticated methodology, cost-benefit analysis can fail as a guide to public policy for a variety of reasons.

It can fail because at times the natural question, "Do the costs outweigh the benefits?" is misconceived. We should not be evaluating individual proposals but looking at a variety of them simultaneously both to identify the best deal we can get for our resources and to see how the consequences of different projects interact.

Cost-benefit analysis can fail because the analysis is performed incompetently. One popular miscue is ignoring uncertainties; that is, assuming that we know the future and that our projects always come off as planned. Another is ignoring consequences that are hard to quantify—like esthetic degradation, species extinction, increasing or decreasing society's resilience—or consequences that have no lobbyists—for example, things that affect future generations. Incompetence may occur because personnel with the training and the wit or commonsense to handle subtle issues are unavailable or because talented personnel are not given the resources needed to do the job right.

Cost-benefit analysis can fail because it is done dishonestly. My colleague, Sarah Lichtenstein, reports being in the back wards of a District of Columbia area consulting firm and seeing an analyst hunched over a terminal massaging a computerized analysis. Said he, "The analysis didn't come out the way my client wanted it. However, there's quite a bit of wiggle room or ambiguity in almost all of the cost, benefit, and probability assessments. I'm just going to alter each a little bit until I get the right conclusion. No one will notice and my client will be happy with this justification for what he was going to do anyway." The contract research industry's interest in keeping those RFP's coming at times encourages what might be considered a form of dishonesty, the rarity of occasions on which analysts blow the whistle on one another for shoddy work, except when they disagree with the substantive conclusion.

Even with the most dedicated and talented of analysts, cost-benefit analysis can fail us because the inputs needed for it to do its magic are simply unavailable.

A consequence, good or bad, cannot be evaluated unless it is enumerated or listed. Research shows, however, that important consequences are often inadvertently omitted from analyses and that people are quite insensitive to omissions. What is out of sight is effectively out of mind. There is today no technique for insuring completeness.

Mr. **Eckhardt**. Are you suggesting that a computer have a red light that says tilt?

Mr. **Fischhoff**. I like that.

One often hears about the distinction between facts and values in decisionmaking, with facts being left exclusively to the experts and values being assessed by the experts in some way that somehow or other reflects the common will. Unfortunately, the vaunted objectivity of the facts is often something of an illusion. For most interesting cases, we do not know and perhaps cannot know what is and will happen to the required degree of precision. Even the experts have to go beyond—even far beyond—the data given and rely on educated intuition. Again, research suggests that such judgments may be much more fallible than we would like to believe.

Cost-benefit analysis admits one limited expression of values, their dollar equivalents, or some similar metric. The problems with this constraint are discussed often enough not to bear repeating. More general techniques, like decision analysis, admit the subjectivity of assessing the values and the need to consider even those consequences that are not easily dollared. Yet, even these techniques do not acknowledge that our values are often indeterminate. As individuals or as a society, we do not know the value of a human life, the proper tradeoff between dyeing one's hair and incurring a vague increase in the probability of cancer some years hence, or what to think about intergenerational equity issues.

Mr. **Scheuer**. I am having difficulty hearing your testimony. Would you pull the mike in a little closer, please?

Mr. **Fischhoff**. Let me just repeat the last point.

In many of these situations, we are dealing with value issues. For many of the complicated problems that face us, I do not think our values are very well worked out. I think we do not really understand what is the appropriate tradeoff between the ability to dye your hair and incurring some vague increase in cancer some years hence.

I think very few of us really have thought through issues of intergenerational equity. In those situations, doing an analysis may lead us to believe that we have an answer that is much firmer than is actually the case.

Mr. **Scheuer**. What is the answer to that? I admit we have not, as a society, made a lot of these tradeoffs. We have not even analyzed the costs versus the benefits.

We have to do something. What is your suggestion?

Mr. **Fischhoff**. I guess my suggestion would probably be a reiteration of what you were saying earlier. I think there is no substitute for common sense. I think we might be better off realizing that we do not have any magical trick or tool which is going to give us these answers and rely on our own judgment.

Mr. **Scheuer**. On the saccharin thing, for example, what the Congress, in effect, said to the Food and Drug Administration is: Look, you don't really know enough about this. Our society is not in a position to make a disciplined cost-benefit analysis.

We know that we have a comparatively small lifetime statistical probability of getting cancer of the bladder. Using these low-cal drinks and what not will be an extremely small incremental add on to an already statistically almost infinitesimal risk of getting cancer of the bladder. Therefore, what we are going to do is simply inform the public there is some risk of getting cancer of the bladder.

If you use a hair dye, there is some risk—we don't know how much—of doing something to your system which isn't good. If it is important enough to you to dye your hair henna, and if it is important enough to you to engage in a weight-reduction process, then go ahead and use these products. But we want to give you as much knowledge as we have as to the degree of risk that you are taking. Then you have to weight the benefits to you.

That is more or less what we have done—is it not—on saccharin? And I presume that is sort of what we are doing on a lot of other products that may have some theoretical, very minor statistical risk of being carcinogenic.

In your view, do we solve this generational problem by giving young people all the information that we have and then say to make your own risk-benefit calculus? If that is not what we ought to do, what should we do?

Mr. **Fischhoff**. I think that often the saccharin issue is cited as a failure of the system. I think in some ways it may—in the terms that you are describing it—be a success of the system. I think we are facing these issues much more directly than we have at any time in our past.

We are forcing the relevant scientific information out of the text books and scientific journals into the public domain. The kind of debate that has gone on around saccharin and cancer has probably raised the level of all of our intuitions and ability to make these kinds of decisions.

I think that one might make a plausible argument that in many situations the kind of balancing that goes on in the political process—people arguing and making their deals and whatever—may be a more valid balancing of the costs and benefits than any kind of magical formula that is done, again, in some dusty corridor and does not generally educate the public and is not really subject to the kind of scrutiny that an open public debate provides.

I still am not certain that I am able to make the proper decision about saccharin, having heard all this and having dealt for risk issues for *x* years; but I like being educated. I like being given the chance and having my intuitions developed.

Mr. **Scheuer**. Do you like having the power to make the decision yourself for good or bad?

Mr. **Fischhoff**. In a situation in which I have adequate information and I have some sort of freedom of choice.

There are some things in the marketplace that I have no control over; in those I want somebody to protect my rights; some situations in which I am technically incapable of understanding the issues, there I want to be protected.

There are problems with getting the facts. Getting the facts in an analysis is highly judgmental, and our judgments are limited. Getting the values in analysis is highly judgmental, and there there are serious problems with our judgment.

The bottom line in any kind of a cost-benefit analysis is how good the best guess of the analyst is. There again is a question of judgment. There again there is considerable research done by psychologists suggesting that we tend to be overconfident. We tend to exaggerate greatly the extent of our scientific knowledge and the degree to which we have completed analyses.

I think that one of the issues we will probably end up discussing here is whether we can be worse off for having done a cost-benefit analysis. I think one of the situations in which we can be worse off for doing an analysis is in situations in which we are led to believe that we really understand issues that we don't, and we are led to be less cautious than reason might demand.

A cost-benefit analysis can also fail because it has, like any other model, a constrained view of reality. Any cost-benefit analysis is always framed in terms of some specific issue. For example: Is this an adequate site for a particular kind of a powerplant? Now, if that definition of the issue does not accord with what is bothering people, then they are not going to accept the issue, they are not going to accept the analysis, and they are going to fight hard and fight dirty.

If I think the real issue is growth or no growth, whether or not we should be increasing our energy capacity or not, then I will do whatever I can to thwart an analysis because my point of view is not represented in the analysis.

As with any other issue, cost-benefit analysis' meaning lies in part in its method. It is a method that leads to the concentration of power in a technical elite—of which I happen to be a part to some extent—and the corresponding disenfranchisement both of the lay public and of the people sitting up there. I think that is sort of a principal issue that might lead one to be skeptical about cost-benefit analysis.

Finally, cost-benefit analysis hinders our understanding when it claims to be the only path to truth, or at least the best path in all situations. Such methodological imperialism breeds antagonism, restricts debate, and reduces the possibility of creative solutions.

As a society, we are facing problems of extraordinary complexity and magnitude. Invocation of cost-benefit analysis is a healthy sign of our willingness to confront these issues in an open, scrutable fashion.

To realize their potentials, analyses would have to (*a*) ask the right questions; (*b*) recognize the limits of their factual component; (*c*) own up to their underlying value assumptions; (*d*) invite critiques from varying quarters; (*e*) admit the indeterminacy of the answers they produce; and (*f*), support, rather than subjugate, our political institutions.

Given the limited reservoir of analytical talent, the limited quality control within the analysis industry, the political and legal constraints on the use of analysis and the difficulty of the problems to which it is addressed, one must wonder how often these goals can be achieved.

It would be nice to have a magical formula telling us what to do. We would be kidding ourselves, though, to believe the cost-benefit

**analysis, or any technique, is going to save us from confronting our uncertainty and conflicts about what we know and what we want. Excellent cost-benefit analyses can help guide and order our thinking; however, we seldom should put very much faith in their bottom line.**

**Thank you.**

**[Testimony resumes on p. 53.]**

**[Mr. Fischhoff's prepared statement follows:]**

## STATEMENT OF BARUCH FISCHOFF
## DECISION RESEARCH

Recognition of the uncertainty inherent in social plans has generated a variety of formal approaches to coping with uncertainty. Perhaps the most heavily touted and widely adopted are variants of cost-benefit analysis. Such analyses ask whether the expected benefits from a proposed activity outweigh its expected costs. Although based on an appealing premise and supported by a sophisticated methodology, these procedures have a number of characteristic limits. One set of limits is imposed by the unavailability of necessary inputs to the analysis. Since neither the values nor the likelihood of many costs and benefits can be assessed by any formal computations, they must be derived by human judgment. Research has shown, however, that probability judgments are often quite unreliable and prone to systematic biases, while judgments of value are highly labile, changing with subtle (and formally irrelevant) shifts in the elicitation procedure. The second set of limits arises when one comes to assess the quality of analyses. There have been few systematic evaluations of formal analyses or attempts to develop a methodology for assessment. Again, one is forced to rely upon judgments which research has shown to be untrustworthy. A third set of limits is the inability of the procedures to address critical issues in the management process they are designed to abet. These issues include the acceptability of the political philosophy underlying such procedures, the feasibility of implementing their recommendations, and the generation of managerial options. The contribution of cost-benefit analysis may be enhanced by reducing whichever of these problems are tractable, acknowledging those that are not, and clarifying the responsible role of cost-benefit analysis in the management process.

## Uncertain Guides to Public Policy

The costs and benefits of large scale interventions into people's lives (e.g., social reforms, new technologies) are almost inevitably clouded with uncertainty. Such projects typically seem to bring some benefit and to entail some risk, but the extent of each and the acceptability of the tradeoff is difficult to determine. A variety of approaches have been proposed for resolving these uncertainties. The most prominent of these approaches are variants of cost-benefit analysis; they ask, in effect, whether or not the expected benefits outweigh the expected costs.

The expected cost of a project is determined by enumerating all aversive consequences that might arise from its implementation (e.g., increased occupational hazard), assessing the probability that each will occur, and estimating the cost or loss to society should each occur. Next, the expected loss from each possible consequence is calculated by multiplying the amount of the loss by the probability that it will be incurred. The expected loss of the entire project is computed by summing the expected losses associated with the various possible consequences. An analogous procedure produces an estimate of the expected benefits. Figure 1 works out one hypothetical example. Prominent variants on this procedure are cost-effective analysis (which compares the relative benefits of alternative actions), risk-benefit analysis (in which the major costs are risks to life, limb, or property), and decision analysis (which avoids the need to reduce all consequences to monetary units by directly eliciting value judgments).[1]

(See Figure 1)

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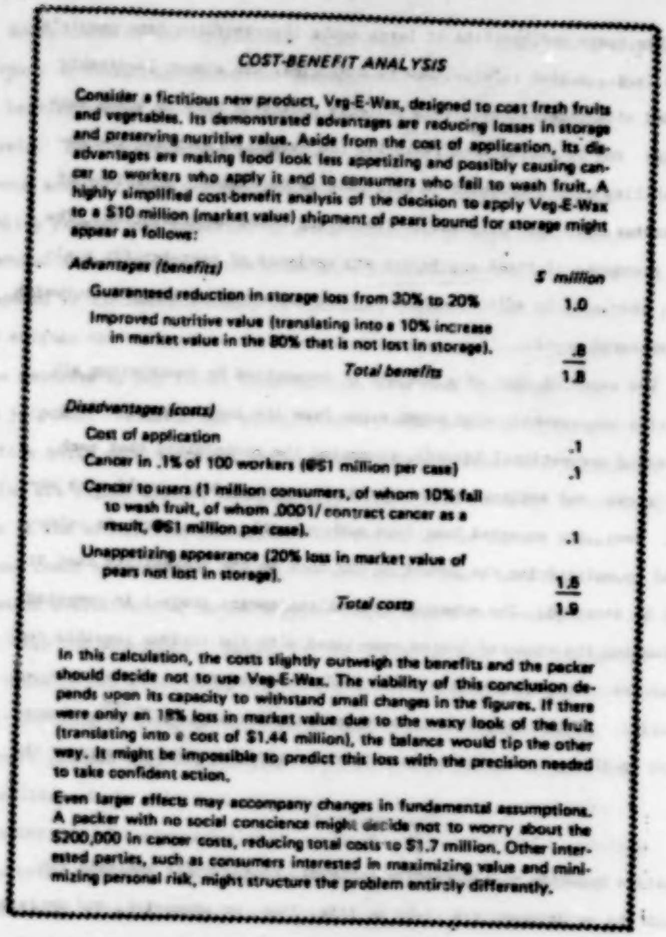
[1] Excellent expositions of these procedures may be found in a number of sources, including Keeney and Raiffa (1976), Layard (1974), Stokey and Zeckhauser (1978), and Raiffa (1968).

Figure 1



### COST-BENEFIT ANALYSIS

Consider a fictitious new product, Veg-E-Wax, designed to coat fresh fruits and vegetables. Its demonstrated advantages are reducing losses in storage and preserving nutritive value. Aside from the cost of application, its disadvantages are making food look less appetizing and possibly causing cancer to workers who apply it and to consumers who fail to wash fruit. A highly simplified cost-benefit analysis of the decision to apply Veg-E-Wax to a $10 million (market value) shipment of pears bound for storage might appear as follows:

| *Advantages (benefits)* | *$ million* |
|---|---|
| Guaranteed reduction in storage loss from 30% to 20% | 1.0 |
| Improved nutritive value (translating into a 10% increase in market value in the 80% that is not lost in storage). | .8 |
| *Total benefits* | 1.8 |
| *Disadvantages (costs)* | |
| Cost of application | .1 |
| Cancer in .1% of 100 workers (@$1 million per case) | .1 |
| Cancer to users (1 million consumers, of whom 10% fail to wash fruit, of whom .0001/ contract cancer as a result, @$1 million per case). | .1 |
| Unappetizing appearance (20% loss in market value of pears not lost in storage). | 1.6 |
| *Total costs* | 1.9 |

In this calculation, the costs slightly outweigh the benefits and the packer should decide not to use Veg-E-Wax. The viability of this conclusion depends upon its capacity to withstand small changes in the figures. If there were only an 18% loss in market value due to the waxy look of the fruit (translating into a cost of $1.44 million), the balance would tip the other way. It might be impossible to predict this loss with the precision needed to take confident action.

Even larger effects may accompany changes in fundamental assumptions. A packer with no social conscience might decide not to worry about the $200,000 in cancer costs, reducing total costs to $1.7 million. Other interested parties, such as consumers interested in maximizing value and minimizing personal risk, might structure the problem entirely differently.

Source: Fischhoff, Slovic & Lichtenstein, 1979

Between them, they have garnered a considerable following among bureaucrats seeking systematic approaches to management. These, in turn, have generated a vigorous contract research industry, entrusted with the implementation of these analyses. Proponents of formal analysis as a guide to public policy can point to the intuitive appeal of balancing costs and benefits and to the great flexibility of such analyses; in principle, they can be revised to incorporate new options and new information. Furthermore, the whole procedure is open to public scrutiny. Each quantitative input or qualitative assumption is available for all to see and evaluate, as are the computational rules used to combine them.

Unfortunately, these procedures have a number of characteristic limits on their usefulness as management tools. These limits arise when the mathematical formalisms confront the fallible individuals who must conduct, accept, or implement them. Be they technical experts, lay intervenors or government regulators, these individuals all have, to some extent, limited capacity to process technical information, restricted resources to devote to the project at hand, irrational apprehensions about its consequences, intransigent prejudices about the facts of the matter, ulterior motives, and incoherent and unstable values on critical issues.

When uncertainty is inherent in the human condition, the best that formal analysis, or any other scheme for managing society, can hope to do is get the most out of what we do know and make us sensitive to what we do not. To do that, even an approach that is conceptually sound, as cost-benefit analysis appears to be at first blush, will be of little use unless it is designed with people in mind. People must accept its logic and its conclusions, provide its inputs , carry out its calculations, understand its limitations, and respond wisely when its dictates impinge upon their lives. Table 1 provides one summary of the features one would like in a policy-setting tool designed to work with people.

(See Table 1)

When one considers the people in the cost-benefit ointment, three distinct sets of limits arise. One set of limits is imposed by the unavailability of necessary inputs to the analysis. Without those inputs, the implementability of cost-benefit analysis must be seriously questioned. A second set of limits comes from the inability of the analysts to assess the validity of their work and incorporate that assessment into their guides to action. The absence of such appraisals creates problems for the logical soundness of such analyses and their ability to protect the public from unanticipated side effects. The third set of limits comes from the failure of these methods to address critical management issues. These include the acceptability of the political philosophy underlying the procedures and the feasibility of implementing their recommendations.

Availability of Inputs

Performing a full-dress analysis assumes, among other things, that (1) all possible events and all significant consequences can be enumerated in advance; (2) meaningful probability, cost and benefit values can be produced and assigned to them; and (3) the often disparate costs and benefits can somehow be compared to one another.

Unfortunately, some of these tasks cannot be completed at all; while for others, the results are hardly to be trusted. Despite the enormous

## Table 1

### Desiderata for a Policy Making Tool

1. **Conceptually sound**
    - (a) Comprehensive, coherent
    - (b) Derived from axioms formalizing assumptions and justifying conclusions
    - (c) Considers alternative actions (including inaction)
    - (d) Acknowledges uncertainty
    - (e) Flexible enough to incorporate new information
    - (f) Leads to resolution (an answer)
    - (g) Ethically acceptable in terms of broadly accepted principles
2. **Implementable**
    - (a) Adequate inputs available
    - (b) Cadres of competent technical people available
    - (c) Can be translated to operational terms
    - (d) Can be completed in reasonable period of time
    - (e) Will degrade well when done imperfectly
3. **Politically acceptable**
    - (a) Relatively invulnerable to criticism
    - (b) Either responsive to powerful or deliberately designed to withstand their pressure
    - (c) Allows meaningful participation without facilitating obstructionism
    - (d) Respects social contract
4. **Open to evaluation**
    - (a) Assumptions transparent
    - (b) Avoids disciplinary blinders by eliciting varied critiques
    - (c) Facilitates iteration
    - (d) Failures detectable (correctable)
5. **Respects institutional constraints**
    - (a) Relevant institutions have the legal mandate to implement the approach and its conclusions
    - (b) Can our legal and legislative legacy accommodate its innovations?
    - (c) No easily exploitable loopholes
6. **Creates no side effects**
    - (a) Unwanted changes in social and political institutions
    - (b) Neglect of some solutions or some problems
    - (c) Reduction of social resilience (e.g., freezing on current solutions, reduction of innovation or society's ability to experiment)
7. **Promotes long-term effective management**
    - (a) Cumulative record created of deliberations and precedents
    - (b) Educates participants
    - (c) Subsequent decisions need not start from scratch
    - (d) Treats classes of problems

scientific progress of the last decade or two, we still do not know all of the possible physical, biological, psychological, and social consequences of any large-scale project. Where we know what the consequences are, we often do not, or cannot, know their likelihoods. For example, although we know that a nuclear reactor core melt-down is unlikely, we will not know quite how unlikely until we accumulate much more on-line experience. Even then, we will be able to utilize that knowledge only if we can assume that the system and its surrounding conditions remain the same (e.g., there will be no changes in the incidence of terrorism or the availability of trained personnel). For many situations, even when a danger is known to be present its extent cannot be known. Whenever low-level radiation or exposure to toxic substances is involved, consequences can be assessed only by somewhat tenuous extrapolation from the consequences of high-level exposure to humans or low-level exposure to animals (Harriss, Hohenemser, & Kates, 1978).

In all these cases, we must rely upon unaided human hudgment to guide or supplant our formal methods. Research into the psychological processes involved in producing such judgments offers reasons for pessimism. A rather robust result is that people have a great deal of difficulty both in comprehending information under conditions of complexity and uncertainty and in making valid inferences from such information. The fallibility of such judgment stems in part from the counterintuitive nature of many probabilistic processes, in part from the lack of hands-on experience with low-probability and high-consequence events, and in part from the mental overload created by many problems (Slovic, Fischhoff, & Lichtenstein, 1977).

The failings of our intuitions are shown in persistent tendencies to neglect various kinds of normatively important information, such as population base rates (indicating how common a particular event is), sample size (indicating how reliable evidence is) and predictive validity. Other kinds of information are attended to, but given inappropriate interpretations. People tend to be more confident making predictions on the basis of redundant information than with independent information (although the latter has greater predictive validity), they readily find interpretable patterns in random sequences, and they assume that more information guarantees better performance even when it only generates confusion. When asked to synthesize information from their experience, people tend to misjudge the risks to which they are exposed, they remember themselves to have been more foresightful--and others to have been less foresightful--in past judgments than was actually the case, and they sometimes persevere in erroneous beliefs despite mounting, even overwhelming, contrary evidence Fischhoff, 1975; Ross, 1977; Tversky & Kahneman, 1974).

To the best of our understanding, these judgmental biases do not reflect folly, but the occasional (or frequent) inadequacies of people's best attempts to muddle through difficult problems. Often these attempts reflect the use of judgmental heuristics or rules of thumb that embody moderately valid appraisals of regularities in the world around us. In situations allowing a trial-and-error, successive correction approach to decision problems, these heuristics often work pretty well. However, where we (as planners or consumers) must get our decisions right the first time or suffer severe consequences, the limits of these heuristics may spell real problems.

These problematic tendencies are typically observed in situations where people's sole motivation would seem to be making the best, most "objective," judgment possible. Such situations are designed to avoid the additional problems engendered by the coloring of judgments by wishful thinking, self-serving motives, selective attention, cognitive dissonance, and the like. Although the evidence is sketchy, there is at the moment no good empirical reason to believe that these problems are appreciably reduced when the judgment in question carries high (personal or societal) stakes or when the judge is a substantive expert forced to go beyond the available data and rely on intuition (Fischhoff, 1977; Slovic, Fischhoff, & Lichtenstein, 1977).

Such results provide strong evidence for using formal methods for producing and combining information whenever possible--and for treating the results of such analyses with considerable caution because of their inevitable judgmental component.

Once the consequences have been enumerated and their likelihood assessed, a price tag (in dollars or utiles) must be placed on them. When it comes to tradeoffs between deaths today and in the future, between sterility and black lung disease, or between profits and lives, both the exigencies of our political processes and the indeterminate nature of cost-benefit logic force us to ask people for their opinions

Such questions of value would seem to be the last redoubt of intuitive judgment. Unfortunately, however, subtle changes in how questions are posed can have a major impact on the opinions elicited. Worse yet, in situations where alternative questioning procedures elicit different preferences, the normative theory often offers no guide as to which of the different judgments is to be preferred. When people's judgments show this sort of lability, the method may become the message, leading to decisions not in the decision makers' best interest, to action when caution is desirable (or the opposite), or to the obfuscation of poorly articulated views (Fischhoff, Slovic, & Lichtenstein, in press).

Many of these effects have been known since the antiquity of experimental psychology in the mid-1800's. Early psychologists concerned with the relationship between sensations and judgments about them found that both the threshold for discerning a sensation and the threshold for discriminating between two sensations depended on a variety of subtle aspects of how stimuli were presented and how responses were elicited. Different judgments were attached to the same stimuli as a function of whether those stimuli were presented in ascending (increasing on a physical continuum) or descending order, whether the set of stimuli was homogeneous or diverse, whether particular regions on the continuum were densely or sparsely represented, whether sequentially presented stimuli were relatively similar or disparate, whether values near the threshold of detection were included or not, and whether the respondent made one or many judgments. Even when the same presentation was used, different judgments might be obtained with a numerical or comparative (ordinal) response mode, with implicit instructions motivating speed versus accuracy, with a bounded or unbounded response set, with small or large numbers (subsequently normalized), or with verbal or numerical labels. The instability of judgment is heightened by the fact that perception is inherently accompanied by some random error and by idiosyncratic tendencies such as fatigue, locking in on stereotypic ways of viewing a problem, second-guessing the elicitor (what am I supposed to say?), and linking variables that should be independent (halo effects).

All of these problems emerge when people are questioned about their values or preferences. The elicitor must decide how many questions to ask and how to word them; how many alternatives to consider and in what order to present them; what response format to use and how much time to allot for it. The preferences expressed will reflect in part the respondent's true beliefs, in part the method used to uncover them. Indeed, no decision is so clear-cut in its options, events, and attributions, no respondent is so mechanical, that these problems can be avoided entirely.

Lability may be particularly troublesome when people are asked about value issues raised by many proposed technologies (e.g., the breeder). For such new and complex issues, with subtle interactions and gargantuan effects, people may have no articulated preferences. In some fundamental sense, their values are incoherent, not thought through. The desires they express at any given time are those tapped by the particular question posed. That question may evoke a central concern or a peripheral one; it may help clarify the respondent's opinion or irreversibly shape it; it may even create an opinion where none existed before.

Listing a few specific effects may indicate the power an elicitor may deliberately, or inadvertently, wield in shaping expressed preferences. The desirability of possible outcomes is often evaluated in relation to some reference point. That point could be one's current (asset) position, or an expected level of wealth (what someone with my talents should be worth at time t), or that possessed by another person. Shifts in reference point are fairly easily effected, and can lead to appreciable shifts in judged desirability, even to reversals in the order of preference. Consider, for example, how one might think about the same safety program conceptualized in terms of lives saved or lives lost, with the respective reference points of the current situation or an ideal one. As one gets closer to an event with mixed consequences, the aversiveness of its negative aspects may increase more rapidly than the attractiveness of its positive aspects, making it appear, on the whole, less desirable than it did from a distance. People may have opposite orders of preference for gambles when asked which they prefer (which focuses their attention on how likely they are to win) and when asked how much they would pay to play each (which highlights the amount to win). People may prefer to take a chance at losing a large sum of money rather than absorb a smaller sure loss, but change their mind when the sure loss is called an insurance premium. A relatively unimportant attribute may become the decisive factor in choosing between a set of options if they are presented in such a way that that attribute affords the easiest comparison between them (Fischhoff, Slovic & Lichtenstein, in press; Kahneman & Tversky, 1979).

Three important features of these shifting judgments are (a) people are typically unaware of the potency of such shifts in their perspective, (b) they often have no guidelines as to which perspective is the appropriate one, and (c) even when there are guidelines, people may not want to give up their own inconsistency, creating an impasse.

## Limits to Setting Limits

The bottom line of a cost-benefit analysis is the analyst's best guess at the relative preponderance of costs or benefits. Before action can be taken, one must know how good that best guess is. Depending upon the breadth of the confidence intervals on the "best-guess" cost-benefit ratio, one might want to collect more data, install back-up systems to reduce some of the uncertainties, or abandon the project for one whose consequences are better known.

The analysts' standard practice for acknowledging and accommodating uncertainty in their inputs is through the judicious use of sensitivity analyses. The final calculations are repeated, each time using an alternate value of one troublesome probability or utility. If each reanalysis produces similar results, then the case is made that these particular errors do not matter. One way of viewing the research on judgmental biases described in the previous section is that it merely points to additional sources of error calling for sensitivity analysis.

Unfortunately, however, there are no firm guidelines as to which inputs might be in error or what is the appropriate range of possible values to be tested. The possibility of judgmental biases would, for example, be considered only if the analyst were aware of the relevant research and took it seriously. A further problem with sensitivity analysis is that it typically tells us little about how the uncertainty from different sources of error is compounded, or about what happens when different inputs are subject to a common bias. The untested assumption is that errors in different inputs will cancel one another out, rather than compound in some pernicious way (Fischhoff, in press).

The reasonableness of such an independence assumption seems weak when a set of judgments is elicited with the same procedure, inducing the same perspective. For example, asking about preferences in a mode that incorporates a reference to dollar values might persistently deflate the expressed importance of environmental or other less tangible values. To take an example from the elicitation of judgments of fact, the U.S. Reactor Safety Study called upon its experts to assess unknown failure rates by the "extreme fractiles" method, choosing one number so extreme that there was only a 5% chance of the true failure rate being higher and a second number so low that there was only a 5% chance of the true rate being lower. Research conducted with a variety of other tasks and subjects have shown that this technique routinely produces too narrow confidence intervals, so that the precision of these estimates is systematically exaggerated (Lichtenstein, Fischhoff, & Phillips, 1977).

Even if sensitivity analysis could handle the compounding of uncertainty, in some contexts it completely misses the point. Many of the effects discussed under the rubric of the lability of values reflect the introduction of new, possibly foreign, possibly distorted perspectives into a decision-making process. Invocation of sensitivity analysis will not excuse the imposition of an elicitor's perspective on the respondent. Nor will it handle shifts in perspective that lead to reversals of preference.

In the end, determining the quality of an analysis is a matter of judgment. Someone must intuit which inputs are dubious and which alternate values should be incorporated in sensitivity analyses. Essentially, that someone must decide how good his or her own best judgment is. Unfortunately, an extensive body of research suggests that people are overconfident in the quality of their own judgment. Indeed, people have been found to be so overconfident in their degree of general knowledge that they will accept highly disadvantageous bets based on their confidence judgments. Furthermore, this bias seems to be impervious to instructions, familiarity with the task, question format, and various forms of exhortation toward modesty (Lichtenstein, Fischhoff, & Phillips, 1977; Fischhoff, Slovic, & Lichtenstein, 1977).[2]

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[2] One recent piece of convergent anecdotal evidence is the conclusion of the review committee chaired by H. W. Lewis that the Reactor Safety Study had greatly overstated the precision with which it had been able to assess the probability of a core melt down (U.S.NRC, 1978).

An earlier version of this paper will appear as "Behavioral Aspects of Cost-Benefit Analysis" in G. Goodman (Ed.), Impacts and risks of energy strategies: Their analysis and role in management. London: Academic Press, in press.

A particularly relevant version of this overconfidence emerges when people are asked to judge the completeness of the representation of a problem. Research here has shown a persistent tendency to underestimate what is left out and overestimate what is known. As before, while most of this psychological evidence is derived from work with laypeople, there is some systematic and considerable anecdotal evidence of similar processes at work with experts. Among the generic kinds of issues whose omission might not be adequately noted by technical experts are: (a) the imaginative ways in which human error can mess up a system (e.g., Three Mile Island); (b) the range and rate of possible changes in people's values and behavior (e.g., regarding energy consumption); (c) the number of unknown or undetected physical, biological, or psychological effects of a new system; and (d) the interrelation between system components (e.g., common mode failures or the possibility of a system failing because a back-up component has been removed for routine maintenance) (Fischhoff, Slovic, & Lichtenstein, 1978).

No analysis, performed in real time and with finite resources, claims to be complete or error free. Indeed, all responsible analysts include sensitivity analyses with their reports. The preceding discussion suggests, however, that it is hard to assess the adequacy of these analyses. We have an urgent need for a better understanding of what errors may enter into an analysis, how virulent they are, how they are propagated and compounded through the analysis, what can be done to reduce their impact, how we can assess their total impact, and what that assessment means in terms of action. In a sense, what we need is an error theory for cost-benefit analysis, supplemented by some empirical study of the fallibility of analyses conducted in the past.

The qualifications accompanying many (or most) analyses include reference to what could have been done with greater time and resources.

These two commodities are, however, always going to be limited, and we must know how well cost-benefit analysis serves us under realistic constraints. One conclusion of such an assessment might be that cost-benefit analysis is useless unless XX of the total budget can be invested in it; another might be that virtually all the value of a cost-benefit analysis comes from structuring the problem and conducting a few back-of-the-envelope calculations within that structure. A third possible conclusion is that, in most situations, the judgmental components of cost-benefit analysis are so essential and so deeply buried that conducting a formal analysis merely creates an aura of solvability around problems that are quite dimly understood.

## Limits of Scope

Like all other policy-making procedures, cost-benefit analysis deals with only a portion of an entire problem. The crucial question here is whether that segment can stand alone and is able to contribute to the rest of the process, or whether the internal logic of the model disintegrates when confronted with broader realities.

The segment addressed by cost-benefit analysis is that most amenable to formal analysis and least accessible to individuals without technical expertise. This is most certainly true in variants that rely heavily on tools like shadow pricing or revealed preferences to deduce what people want without asking them. Some variants, like decision analysis, try to overcome this bias by incorporating elicitation procedures that can, in principle, be used with corporate executives, government regulators, or people off the street. Despite such efforts, however, the very sophistication and centralization of the analysis gives added weight to the opinions of those who are articulate and close to the analyst.

When analytic resources are limited, the analyst must take cues from someone about how to restrict the alternatives and consequences considered. That someone is likely to be the one who commissioned the study. If commissioners all come from one sector of society and consistently prefer (or reject out of hand) particular kinds of solutions or consequences, a persistent bias may be produced. Such bias would determine what issues are never analyzed and how results are presented. If the commissioners are public officials, there may be a strong predisposition toward reports that bury uncertainties and delicate assumptions in sophisticated technical machinations or in masses of undigested data.

If one examines the public criticisms to which cost-benefit analyses are subjected, a number of themes emerge. One is that there is usually a population of experts who are angered because the sensitivity analysis did not include what they believe to be appropriate alternative values for some inputs. When these experts view themselves as having qualifications rivaling those of those experts who conducted the study, the obvious implication is that even the elite community involved is somewhat restricted, perhaps for reasons of political or academic power.

A second group of critics views the segmentation of participants as a more serious issue than the substantive topic at hand. Their main concern is that the use of analysis transfers power for societal decision making to a technical elite, in effect disenfranchising the lay citizenry.

One might argue that given the vagaries of lay judgment described above, such a transfer of power is in the best interests of even that lay public. Let someone competent do the job; we'll all be better off. The counter-argument has several facets. One is that every analysis requires a variety of judgments that might just as well be performed by lay people. Regarding questions of fact, when they are forced to go beyond their tools and data and rely on intuition, experts may be little better than non-experts. Regarding questions of value, being close to the action should not confer superiority on experts' beliefs. The second part of the argument is that there are higher goals than maximizing the efficiency of a particular project. These include developing an informed citizenry and preserving democratic institutions. The process may be more important than the product, making it important to devote the resources needed to make meaningful public participation possible.

Such participation requires new tools for communicating with the public, both for presenting technical issues to lay people and for eliciting values from them. It may also require new social and legal forms, such as hiring representative citizens to participate in the analytic process, thereby acquiring the expertise needed to confer the informed consent of the governed on whatever decision is eventually reached. Such a format might be considered a science court with a lay jury. It would consider cost-benefit analysis as one input to its proceedings. It would also place the logic of jurisprudence above the logic of economic analysis, acknowledging that there is no formal way to summarize the issues at hand.

A third group of critics objects to the segmentation of the particular problem from the broader context of social issues. The critics often fight dirty or irrationally (from the perspective of the formal analyst) because they view the cost-benefit analysis as one arena in which political struggles are waged. Those struggles have a different logic than that of economic analysis. In them, it may be fair to engage in unconstructive criticism, viciously poking holes in analyses if the results do not support one's position. It may even be legitimate to ridicule or chastise analysts for ignoring issues (like income distribution) that were outside their analytic mandate.

Some representatives of this position would argue that the very reasonableness of formal analysis involves a political-ideological assumption, namely that society is sufficiently cohesive and common-goaled that its problems can be resolved by reason and without struggle. Although such a "get on with business" orientation will be pleasing to many, it will not satisfy all. For those who do not believe that society is in a fine-tuning stage, a technique that fails to mobilize public consciousness and involvement has little to recommend it.

Thus, there are logics other than that of cost-benefit analysis, coming from legal, political, even revolutionary theory. Like the various ways of implementing the basic cost-benefit framework, each embodies both ideological predispositions and notions of how society operates. Considering these perspectives and the impact that problem formulation can have on people's judgments of their own values and the tendency for such analysis to create an aura of solvability, cost-benefit analysis no longer appears as a value-neutral procedure. This does not mean that it is not or cannot be made into the one technique most compatible with or capable of incorporating the broadest range of values in a particular society. It does mean that a political position of sorts is being taken when one adopts the procedure.

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Like most choices involving ideologies, questions of taste are somewhat disciplined by questions of reality. Those who oppose cost-benefit analysis are responding in part at least to social concerns and facts to which the analysis is relatively or totally deaf. Attention to these concerns can strengthen an analysis and heighten its impact. For example, an analysis that ignores questions of equity will often be overturned by those who come out in the short end of the project in question. Rather than let their work become a number game with no real effect, some analysts have attempted to exploit the kernel of truth in their critics' arguments and incorporate equity considerations. A more political perspective might also help one realize that formal analyses deal with ideal types often having no representation in reality. It is fairly easy to become enamored of abstractions and analyze projects that are never implemented in the way or at the time they are proposed (Majone, 1975). Although the method may be tricky, one could respond to this challenge by considering ensembles of possible representations of the proposed project (i.e., ways in which it might be carried out) or by requiring periodic updates of an analysis as the facts change. A broader perspective could motivate analysts to specify the assumptions about society upon which their analyses are predicated and heighten their sensitivity to the tenuousness of those assumptions. In the extreme, it might even lead them to reject analytical mandates that separate projects from their social context in ways that are not meaningful.

## Conclusion

How well does cost-benefit analysis fare according to the various criteria listed in Table 1? What work is needed to make it fare better? Even though the preceding discussion has focused on some of these topics at the expense of others, a few words about each will give a flavor of what a fuller consideration might reveal.

Conceptually sound. The cost-benefit family of analytic procedures has a logical foundation that is both carefully thought out and widely accepted in both political and academic circles. As a result, both its failings and its assets are better documented than those of its competitors. Although there are still important technical and conceptual problems to work out within the cost-benefit framework (Pearce, in press), a useful investment of energy might be trying to clarify the relationship between that framework and the logic (or ostensible logic) of other approaches. Are they really incompatible? Can cost-benefit analysis be elaborated to incorporate the elements of truth embodied by the alternatives? Perhaps the weakest competition is provided by the "logic" uncovered in studies of people's intuitive decision making. Yet, even here, it is worth asking whether there is not a method in people's apparent madness. Are there not decision-making criteria overlooked by formal analysis yet essential for human welfare or psychological well being (Slovic, Fischhoff, & Lichtenstein, 1979)?

Implementability. Like other computational enterprises, cost-benefit analysis rises or falls on the strength of its inputs. While enormous strides have been made to develop a cumulative data base on various topics, all too often the analyst is forced to rely on intuitive judgments. Judgments of fact tend to be subject to persistent biases that are only now beginning to be understood. Further work is needed here, particularly in studying the judgments of expects. Judgments of value tend to be highly labile and subject to complex and subtle manipulation by the questioning procedure used. Research is needed to produce techniques and settings that enable respondents to elucidate their own opinions.

Politically acceptable. In contrast to the political objections to cost-benefit analysis raised earlier, one may cite a number of fundamental assets. The most important of these is the explicit expression of its structure and inputs, all of which are in principle open to question and revision. To realize this potential advantage, several developments are needed. One is procedures for communicating technical issues to lay people (including regulators and legislators without a technical background) so that they can offer reasoned critiques. A second need is to develop some way for critics to perform their own sensitivity analyses, incorporating their own alternative values for various inputs. Such an opporunity might produce some surprising results, showing the conclusions of analyses to be much more (or less) robust than they initially appeared. It could also help allay fears that these conclusions represent the result of ingenious number-fudging by the analysts. In the back of many cynical critics' minds must lurk the thought that the experts have played around until they found a constellation of values that looks benign but produces the recommendation most favorable to a particular point of view.

Respects institutional constraints. The initial popularity of cost-benefit analysis probably was due to its fitting well into the way in which business was done in various seats of government. Its continued success may be due to the ability of proponents to shape legal and governmental proceedings to accommodate this tool further. Its future prospects may depend on the successful resolution of several persistent problems. One is that it assumes a single decision maker; difficulties arise when there are many hands involved and many views to be incorporated. A second problem is that it is a one-time analysis; as a result, it is not as responsive to changing contingencies, preferences and scientific data as are the bureaucracies it is designed to serve. A third problem is that it requires a level of analytical expertise not possessed by many of the individuals involved in its use, producing aberrations and frustrations.

Open to evaluation. As mentioned, cost-benefit analysis claims to be, if nothing else, open to inspection. To realize the promise of this claim, several developments are needed. Psychological research must find ways to help people appraise the limits of their own knowledge or, failing that, ways to assess how confident they should be given how confident they say they are. Theoretical efforts are needed so that analyses produce better assessments of their own limits and derive the action implications of that cumulative uncertainty. Since such efforts have their own inherent limits, empirical work is needed to review past analyses to explore their foibles and contribution (or lack of it) to the management process.

Creates no side effect. Disenfranchising the lay public is one possible side effect of the wide-scale adoption of cost-benefit analysis about which some segments of the public are quite agitated. Denigrating the importance of consequences that cannot readily be expressed in dollar or other quantitative terms (e.g., extinction, aesthetic degradation) is another. Making a fetish out of currently enjoyed benefits is a third (Mishan, 1972). In general, though, the implications of having a cost-benefit society are poorly understood.

Promotes long-term effective management. Cost-benefit analysis, particularly its sensitivity analysis component, has been instrumental in setting the research agendas of those concerned with understanding the effects of technological projects. To the extent that the priorities of such analyses are correct, this is a major contribution to creating a base of data relevant to sound management. It has also provided a framework within which talented economists could apply themselves to these problems. Finally, although it is criticized for emphasizing product over process, the cost-benefit analysis framework has probably raised the level of debate in many settings and broadened the understanding of even its harshest critics.

There isno verdict on cost-benefit analysis per se. One must consider it in the light of alternative approaches (Fischhoff, Slovic, & Lichtenstein, 1979) and in the context of particular situations that might accentuate its strengths or weaknesses. One must consider not only cost-benefit as it is today, but as it can be improved. One must consider not only the nice idea and the sparkling theory, but the integrity with which it will be applied.

Given the limits to human judgment and consensus described here, it is unlikely that cost-benefit analysis in a pure form will ever be practiced or followed anywhere. The critical question then becomes, does it degrade gracefully?

Mr. Eckhardt. Next is Mr. Robert Crandall, who was Acting Director of the Council on Wage and Price Stability during a formative period. I recognize you at this time, Dr. Crandall.

## TESTIMONY OF ROBERT W. CRANDALL

Mr. Crandall. Thank you, Mr. Chairman.

It is always easier in a discussion like this to go later rather than earlier. I do not think that this committee would like to hear a lengthy discussion of all the techniques used in cost-benefit analysis. Basically, that is what we are discussing here today: The application of economic analysis to difficult problems in social decisionmaking.

I might begin by saying that many of the problems which I now see the Congress responding to have their origins within this body. The reason why there are regulatory decisions which are complex, confusing, and often not in keeping with what one would think would be the simplest, most efficient way to carry out regulation frequently stems from the legislation itself. While I applaud this committee for trying to get a handle on some mechanism for dealing with inefficiencies in regulation, I would suggest that perhaps the fault lies with some of your brethren who mark up the bills providing enabling legislation for the various regulatory agencies.

I might just give you a couple of examples before moving on.

Dr. Lave mentioned the Clean Air Act, in which primary ambient air standards are to be set without regard to any measure of cost. They are to be set as though there exists a safe level of air pollution when, in fact, there is not one scintilla of evidence on any of the criteria pollutants that there exists a unique safe level. Despite that fact, we now have a set of primary ambient air standards which are not zero parts per million. I do not understand how that squares with scientific reality and the instructions in the Clean Air Act.

In the case of OSHA, someone pointed out to me the other day that OSHA under this administration is virtually paralyzed as far as promulgating new regulations. Not a single new health regulation has been promulgated since President Carter came to office, despite the fact that one thought that the leadership of that organization was being placed in the hands of someone who strongly believed in this form of regulation.

One of the reasons is that the statute enabling the Occupational Safety and Health Administration is very vague on the definitions of feasibility and reasonableness. Until the courts make a decision in the benzene case, I think they are going to find it very difficult to proceed knowing whether in fact their judgments are going to be sustained in court.

To move to the issue at hand here, that is the application of analysis to regulation, let me suggest this. While cost-benefit analysis may be a controversial tool because it suggests a certain technique for measuring various effects of regulation, those who oppose cost-benefit analysis have very little to substitute in its place.

I think, in order to make sensible judgments, we have to quantify the effects of a particular policy as best we can and then to compare these effects and decide whether on balance the policy makes sense or does not or whether there are other policies which dominate it.

There seems to me no other way of proceeding. In fact, I do not see what we can do other than trying to place all of these effects into some common metric, as Dr. Lave has suggested. He says he prefers dollars; I will take loaves of bread. I do not care how you measure; the fact is, you have to make the measure.

Even if you do not quantify in any sort of formal way, the judgment made by any regulator that, in fact, he will settle for five parts per million rather than four parts per million implies a value judgment that he has made. The only difference between doing it by some formal analytical route and allowing a regulator to say that five sounds better than four to him is that he does not have to write down what value he is placing on human life or on a reduction of some morbidity-causing agent in the workplace, in the environment, or what have you.

Nonetheless, he is making that judgment. I think it would serve us well if he were to write down what that judgment is and how he makes that judgment and whether that judgment is consistent with other judgments he makes.

Another charge which is leveled at quantification in cost-benefit analysis is that it imparts bias to the decisionmaking process, that in fact, by including those things which we can quantify but not including those things which we cannot, we necessarily provide bias to the decisionmaking process.

I must admit that I think that that is a potential problem, but I do not see it as an insoluble one. I think that, in every instance, there is uncertainty surrounding any particular estimate of a cost or a benefit. I think that, in doing this type of analysis, those uncertainties should be explicitly accounted for. I think there are very well-known techniques for dealing with uncertainty. As I pointed out in my formal testimony, the military uses them. Businesses use them. Even households use them. There is no reason why regulators cannot use them.

Finally, as far as the explicit criticism of cost-benefit analysis goes, there probably is no single menu of approaches to analyzing problems which can be made uniformly applicable to all regulatory decisions. They involve quite different phenomena which require quite different sorts of measurement techniques, and which require quite different sorts of judgments. I do not think that one can specify in a piece of legislation or in an instruction manual for the staff of a regulatory commission exactly how this is to be done. I think that is unfortunate, because it would provide more certainty and more accountability; but I do not think it is possible.

I might just conclude and save most of my discussion for the rebuttal period by pointing out that there is a certain anomaly in much of what one hears about using regulatory analysis, cost-benefit analysis, or cost-effectiveness analysis in regulation. One frequently hears from people that, in fact, we should not use it because we do not know how to do it, we cannot measure the effects of what we are doing, we do not have good sources of information, there are not good measures of the social discount rate which everyone can agree upon, and so forth.

[Testimony resumes on p. 62.]

[Mr. Crandall's prepared statement follows:]

July 30, 1979

Statement by Robert W. Crandall*
Senior Fellow, Brookings Institution

before the

Subcommittee on Oversight and Investigations and the Subcommittee on

Consumer Protection and Finance

of the

U. S. House of Representatives

The use of cost-benefit analysis in regulatory decisionmaking has become an issue in recent years for a number of reasons, most of which lack a reasonable foundation. It has become fashionable to say that cost-benefit analysis is misused by those who are intent upon retarding the progress of health-safety-environmental regulation. I believe that such assertions are little more than political rhetoric aimed at diverting attention from the real issue — the fact that much regulation is promulgated in response to political pressures without careful analysis of the alternatives or of the effects of the regulatory action taken.

Quite simply put, the role of cost-benefit analysis in regulatory decisionmaking is the quantification of the effects of a regulatory decision. Any regulation adds something to human well-being (or at least it should) and it detracts from well-being in other ways. It is important that the effects be acknowledged; that there is some attempt to measure them in a common metric; and that the distribution of them across the population be acknowledged. In short, cost-benefit analysis is nothing more than a systematic measurement of the impact of regulation.

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*The views expressed are my own and are not necessarily those of the officers, trustees, or other staff members of The Brookings Institution.

One frequently hears regulators say that cost-benefit analysis is an important tool in regulatory decisionmaking, but that it should not be the only criterion for making a decision. Alternatively, one hears that benefits cannot be quantified with precision; hence, cost-benefit analysis is only a rough check on the appropriateness of a decision reached by some other method.

These endorsements are simply too weak. I believe that, properly done, cost-benefit analysis is the only reasonable mechanism for evaluating and selecting among regulatory options. It forces a regulator to write down the prospective effects of an array of potential decisions, to compare them, and to select among them in a systematic fashion. It makes it more difficult for him to conceal the reason for a decision which benefits a narrow constituency at a substantial cost to the rest of the public. It makes it more difficult to assert a purported health or safety benefit for which there is no evidence. In short, the excuse for avoiding cost-benefit analysis is likely to be one which argues strongly against regulating at all — or at least against using any decisionmaking tool other than the rolling of dice.

The logic of cost-benefit analysis. Few social decisions can be made intelligently without some attempt to assess their impacts upon the populace. This assessment generally requires quantification. For example, how much better will Johnny read if we supply him with (a) more books; (b) more teachers; or (c) more hours of teachers and books? We ultimately decide not to buy an infinite number of books nor to hire an unlimited number of teachers. Hopefully, these decisions are based upon some quantitative analysis of the impact of additional resources on Johnny's reading and some value society places upon reading. I presume that we would all agree that we could conceivably improve educational performance by increasing school budgets. If at current funding levels this is not likely, then perhaps we should consider decreasing school funding. Whatever our choice, we must compare increments to Johnny's reading with the value of the additional resources required to nurture it. Not to make such comparisons would be reckless and foolish. Since we do limit educational expenditures to a finite level, we must make this trade off.

There is little difference between the homely example concerning Johnny's education and the type of decisionmaking required in the new "social" regulation — regulation of health, safety, and environment. Resources are mobilized to solve a problem — cotton dust, ozone, or head-on automobile collisions. These resources could be used to produce other goods and services; therefore, regulation has a cost. Hopefully, we can find a set of alternative policies which will reduce the ill-effects of exposure to these health- or life-threatening phenomena. As rational human beings we should compare the benefits from such policies with their resource costs. Cost-benefit analysis is simply a phrase describing this comparison.

No one would seriously dispute the validity or usefulness of cost-benefit analysis when applied to decisions concerning military systems or military manpower. We clearly do not have all of the national defense that we could buy or that is required to reduce the probability of a military setback to zero. Why? I presume that it is because we choose to spend some of our resources enjoying the life that our national defense is protecting. The trade off is not easily defined or measured, but each year's Congressional debate over military expenditures focuses quite intensively on the value of new funds earmarked for a prospective B-1 bomber or a cruise missile. No one argues that you cannot measure the value of defense in dollars -- Congress does it year after year.

The problems of implementing cost-benefit analysis. There can be little doubt that it is easier to choose a noise level for the industrial workplace or an exposure limit to ozone by simply picking a number from thin air than to undertake an analysis of the socially-optimal level. This does not mean that our regulators should not try for more precision, however.

In estimating the costs and benefits of a regulatory decision, a number of serious analytical and empirical problems must generally be overcome. First, the costs and benefits are inevitably prospective; hence, data are often not available from past experience with such a regulatory standard. This means that uncertaintly enters the calculation, just as uncertainty enters into business planning, family budgeting, and selecting the final roster for the Washington Redskins. Social scientists have been developing tools for dealing with uncertainty for generations. Businesses use them. Investors use them. The Department of the Defense uses them. Regulators could use them.

Second, the costs of a regulation are often indirect as well as direct. For example, much of the future cost of EPA and OSHA regulation will be the output we do not get from new plants which are not built because of regulation. Since new plants embody the newest technology, this deceleration in plant investment will lower U.S. productivity growth and thereby reduce future potential social output. Quantifying this "secondary" effect is much more difficult than simply toting up the prospective "primary" costs of compliance in existing plants.

Third, all regulatory costs (and benefits) accrue over time. These costs (and benefits) must be discounted back to the present in order to carry out any analysis. The choice of discount rate is thus important in doing the analysis -- just as it is important in evaluating water-resource projects, strategic missile choices, and mass transit investments. Since the debate over the correct discount rate for any of these social policy continues, we cannot say definitively at this point which is the "right" rate. We can only ask government agencies to be consistent and to use similar social discount rates for policies of similar risk.

Fourth, there is always a problem in evaluating the prospective health or safety benefit from a regulation. How much aggravation of asthma will be avoided by a 0.12 primary ambient air standard for ozone? How much cancer will be avoided by a benzene standard of 1 ppm. in the workplace? EPA and OSHA have no way of knowing the answers to these questions with any precision. Either they have not invested much money in seeking the answer (in the case of ozone), or the answer is not knowable given the limitations upon experimentation and the lags involved in cancer formation (in the case of benzene). As a result, they can only hazard a guess at the prospective health effects and admit to a very large standard error of the estimate. This is still no reason not to do cost-benefit analysis. To have a subjective estimate (based upon scientific evidence) of the range of prospective health-safety benefits must be useful to sensible decisionmaking.

Finally, it is often argued that one cannot place a value on improvements in human health or safety — that there is no "dollar value" to such improvements. The answer to this assertion is so obvious that it is surprising that one continues to hear it. Why do regulators set limits upon exposure to health or safety hazards which are greater than zero? Why did OSHA not argue for 0 parts per million for benzene? Or why are not all of the primary ambient air standards set at 0 part per million ? Surely, it is not because we know with certainty that reductions from current standards to 0 parts per million would improve no one's health. It is, quite simply, because the Administrators of EPA and OSHA do not believe the additional health benefits are "worth it". Or, alternatively, they do not think that courts will sustain such a high value placed upon human health. Either way, we have social institutions reaching judgments about the value of improvements in human health. They must. They cannot avoid it. Therefore, all a proponent of sensible judgments would ask is that they write down these values and defend them, and that they use them consistently in evaluating all regulations and all options to each regulation. It is that simple.

The straw men. Opponents of cost-benefit analysis usually focus upon the "value of life" measure as the ultimate argument against cost-benefit analysis. They sneer at the notion that one can place "dollar values" upon improvements in the human condition. Since there has to be a common unit of account in evaluating any complex decision, I would suggest that all cost-benefit analysis be measured in units of loaves of bread. Certainly, there is nothing immoral about comparing the loss of loaves of bread with the loss of life — bread sustains life.

More importantly, the "value of life" criticism generally obscures the fact that what is really not known is the prospective health improvement which the regulation will generate. The uncertainty concerning this effect is likely to be as great as the uncertainty concerning how much our citizens value any improvement. But to admit that we do not know what (if any) health improvements we are getting from regulation is to set back "progress" in pursuing this regulation. It is easier for the proponents of more regulation to express shock and dismay at the thought of placing a dollar value on life than to search for the health evidence which would support various regulations. We have a long, difficult road to travel in getting better scientific health evidence, and we should not obscure our failings in this regard by simply declaiming against the "dollar value of life".

Nor should one assume that because we choose to quantify the evidence surrounding a decision that more bias will creep into the process than now exists. Quantification can only add information which should make it more difficult for the Administrator to reach an unwise decision. At the very least, he should be able to avoid being thrust into a biased position by assuring that all costs and benefits are fairly addressed and quantified by his staff. To suppose that government processes work better when systematic, quantified evidence is suppressed in favor of an unexplained "judgment" by the Administrator is to have faith in the judgment of mortals which I do not share. I would prefer to see the basis for these judgments documented as clearly as possible.

*Summary*. Clearly, poor analysis begets bad decisions. If attempts to quantify costs and benefits are poorly done, they will not lead to good regulatory policy. But the mere use of cost-benefit analysis cannot worsen regulatory performance. Rather, properly understood, cost-benefit analysis should force more quantification of the important trade offs in regulatory policy and thereby improve the quality of regulation and the public's understanding of it.

Mr. SCHEUER. Could you define the social discount rate?

Mr. CRANDALL. That is a rate which allows us to make comparable measures of current and future costs or benefits from social decisions. That is, it is a way of translating a value of, say, a reduction of probability of flood 10 years from now with the cost of building that dam today.

There is a considerable debate as to how one calculates a social discount rate, whether it ought to be some reflection of a market rate of interest or whether it ought to be higher or lower.

Mr. SCHEUER. Can you give us any quantification of a serious illness or a death? Is there some rule of thumb by which we can equate a serious illness or death avoided to a current cost incurred?

Mr. CRANDALL. There is no way in a society which presumes to allow consumers sovereignty to make a judgment ex post on what the value of a life is. That is, I cannot ask you the question how much would you pay to agree to expire on the spot here today. What I can ask you——

Mr. SCHEUER. We do not ask that of an individual, but we are constantly making those decisions.

When Congress does not provide more money for senior citizens, or when they do not provide more money for maternal and child health programs, we are sort of deciding that the infant death rate for our country is going to be 16th in the world and that we are content to be No. 16 in terms of the health of infants. Now, that is a decision we are making every single day of the year.

Mr. CRANDALL. I could not agree with you more. I thought you were asking me how we would measure these values.

Mr. SCHEUER. Yes.

Maybe if we could provide some more precise measurements that Congressmen and other decisionmakers in the executive branch could hone in on, we might finally discover that we can improve the infant mortality rate, especially for low-income minority citizens, by very modest expenditures. But you have to compare something with something in order to make that equation, and we have not done it.

I have the fuzzy feeling—not being an expert in this at all—is that part of the reason that we are spending so little on maternal and child welfare compared to what we are spending, for example, on elderly people is that we have not shown the American people and their representatives here how little it would take in terms of prenatal health and postnatal health to improve very substantially our maternal and infant mortality indexes.

It seems to me it would help if we could develop some kind of index as to the benefit of a death avoided or a very serious, perhaps permanent, crippling avoided.

For example, we know from the research of Dr. Rene Dubois of the Rockefeller University in New York, about brain damage due to lack of adequate protein.

What you are talking about in terms of dollars for adequate diet is infinitesimal. What you are talking about in terms of failure to do provide the protein is to have a brain-damaged person who is otherwise physically able of survivial for 70 or more years. The cost to society of ministering and supporting that brain-damaged individual is absolutely enormous on any cost-benefit calculus; but w have not done the cost-benefit calculus this for situation.

Mr. CRANDALL. I think there are two elements of your question. One is, do we fully understand the techniques available to us to gain improvements in life expectancy or human health? If we did understand how low the costs of certain procedures or therapies were, we might well undertake them, regardless of what value we put on the outcome because the cost is so low.

The second half of that question, which is how does one place a value on human life, is what is often at the center of the emotional debate surrounding cost-benefit analysis. It is a very difficult one to answer from the standpoint of consumer sovereignty for several reasons. First of all, it is difficult to measure how much you and I value the reduction of risk of morbidity or death occasioned by some improvement in the environment around us.

Second, you and I are likely to differ on that. That is, I have friends who skydive, and I have friends who avoided flying because of the DC–10 problem. It would be hard to argue that those people share the same risk values, the same values of avoiding the risk of death. But it is possible to get measures of those things. I would not say that it is easy, but I think it is possible.

In everyday life, people confront decisions which are dangerous and, in fact, make decisions not to proceed to absolute safety because of the costs involved.

Let me conclude my statement by picking up where I was, which is by observing that many people argue that it is very difficult to quantify the effects of any regulatory decision. Yet, at the same time, they argue for very, very complicated, explicit, intervention into the private sector—for social planning, essentially—through environmental policy, of land use policy, and the control of technological change.

It seems to me rather difficult to argue for that kind of intervention at the same time that you say you cannot possibly understand the phenomena sufficiently well to measure the effects of what you are doing.

Mr. **Eckhardt**. Finally, we will hear from Dr. Ashford, assistant director of the Center for Policy Alternatives at M.I.T.

Dr. Ashford has chaired the advisory committee of the Occupational Safety and Health Administration and serves on the Science Advisory Board of the Environmental Protection Agency. He brings to this hearing particular expertise in the areas of health benefit quantification and the implications of regulation for technological development.

## TESTIMONY OF NICHOLAS A. ASHFORD, PH. D., J.D.

Dr. **Ashford**. Thank you, Mr. Chairman.

Let me say at the outset that I agree with the statements here that accountability of regulatory agencies is absolutely essential. I think there is no one who more strongly believes in that issue than myself.

I also believe that identification and quantification of certain costs and benefits is desirable to some extent. The agencies, I believe, have been doing that where it is possible. If you have recently looked at the Occupational Safety and Health Administration, you will see that they have quantified the benefits of removing workers from lead exposure but were unable to do it for benzene; and there are reasons for that.

I feel, however, that to formalize the requirement to do cost-benefit analysis would do great harm and would lead to unintended social consequences.

I have a confession to make here in public. That is, I spent the last 4 years of my life doing cost-benefit analysis in great detail and developing extensive methodologies for this. After all is said and done, I still come here to offer words of caution against the potential misuse of those analytical techniques.

I would ask you this morning to bear with me for a somewhat technical presentation. I want to make some points which I believe have not been made—at least rarely have been made—with regard to these issues. It will take some explaining from me to do that. I hope it will be profitable to you in the end.

I am not going to recite the usual litany of difficult quantification and other issues. I want to raise some other kinds of points which inject a thread of political reality into what is essentially a political process.

I would like to make in my presentation six major points.

First, there are important differences between economic regulation, like rate setting, and the environmental or safety regulation which must not be overlooked in constructing evaluative criteria as to whether or not a regulation is good or bad.

Second, there are serious problems, as you have heard, in calculating both the costs and benefits of proposed regulations, but the problems are different.

Third, the comparison of costs and benefits within a cost-benefit framework is beset by serious difficulties, difficulties that you have not heard of yet this morning. Cost-benefit analysis deceptively appears as a neutral methodology. It is not a neutral methodology. Fourth——

Mr. SCHEUER. Wait a minute. If it is not neutral, who is it biased for, and who is it biased against?

Dr. ASHFORD. I hope to be able to explain that by some examples. That is precisely what I would like to do.

Fourth, it is crucial to distinguish between using cost-benefit analysis as a decision tool—as an aid, as something which makes facts clear—and using it as a decision rule to guide agency action.

Fifth, it is important to realize that some regulatory reform efforts are undemocratic attempts to reorient legislative mandates in which the balance between environmental protection and economic burden has already been struck by the Congress.

Lastly, I want to point out that it is essential to recognize the hidden dangers in the present congressional proposals to require regulatory impact analysis, even those which are motivated by a pure heart.

Health, safety, and environmental regulations attempt to ameliorate the adverse consequences of market activities, and technology in general, by reducing the attendant social costs. We know this.

This regulation attempts to internalize the social costs of production by insuring that the prices of goods and services reflect the true costs to the society. This means that prices in many cases can be expected to go up. Charles Schultze, in his now-famous work with Alan Kneese entitled "Pollution, Prices, and Public Policy," has cautioned us not to regard price rises which internalize social costs as inflationary.

Inflation is a phony issue in the national debate over environmental, health, and safety regulation. This is so not only because price rises are not necessarily inflationary, but also because actual estimates of the effects of regulation on the Consumer Price Index by several groups, including the President's Council on Wage and Price Stability and the President's Council on Environmental Quality, place that effect at well below 1 percent per annum—the recent estimate is 0.2 percent—in a time of double-digit inflation.

Yes, Congressman Scheuer, we should look at all adverse effects on inflation, but I would question the great fervor and vehemence at which regulation in this area is attacked under the guise of being concerned with inflation.

Mr. SCHEUER. Could you explain to us how price rises are not inflationary?

Dr. ASHFORD. If I am a worker and I get asbestos-caused cancer, I pay for it in my medical bills. If you are a producer and install the ventilation equipment to prevent my cancer, the price of your asbestos goes up.

Inflation means you do not get something in return for the price rise. Safely-produced asbestos sold at an increased price should not be viewed as inflationary. Mr. Schultze tell us that time and time again in his book; at least he did when he was a professor. I think it is important to make that distinction.

It is often assumed that, because of the costs of complying with regulation can be easily monetized, they are reliable——

**Mr. SCHEUER.** That may be an interesting abstract exercise for a professor to say that any cost increase that produces some kind of added value is not inflationary——

**Dr. ASHFORD.** Not necessarily inflationary.

**Mr. SCHEUER.** But, in the real world, anything that increases costs is inflationary. Now, a lot of things that go to increase costs are extremely valuable and worth far more than their extra cost, and we would justify them in terms of their inflationary impact. There is no question about that.

**Dr. ASHFORD.** I think we are playing a game of tautology.

**Mr. SCHEUER.** I think we have to understand that anything that increases costs provides a detriment. Now, the question is, is the benefit from that add-on worth the detriment? This is what we are here to explore.

But to say that it is not inflationary because some good is produced is to beg the whole question. What we are trying to do is to quantify the good versus the cost, part of which is the inflationary impact, and make some judgments.

In the case of the asbestos, my subcommittee is engaged very strenuously in looking into the whole question of hair dryers that spew asbestos particles in the air. As a result of a lot of people's efforts and the Consumer Product Safety Commission, there are no more hair dryers being produced today with asbestos. They have done some other things and they have made some substitutions. Maybe that has cost more. Well, we would make a pretty quick value judgment that that certainly is worth the cost.

**Mr. ECKHARDT.** Will my colleague yield?

**Mr. SCHEUER.** Of course.

**Mr. ECKHARDT.** Would my colleague believe that placing a safety valve on a boiler would be inflationary? It might prevent the boiler from exploding. Would that be inflationary? Ordinarily, boilers do contain safety valves that under certain pressures blow off. It costs money to put the safety valve on. It loses energy when the steam comes out. But, if it were not on the boiler, the boiler might explode.

I think that one must always measure, in determining inflation, what the result will be.

**Mr. SCHEUER.** There is no question about it. We will justify the result by the value of the add-on.

**Mr. ECKHARDT.** I thought that was what the witness was stating.

**Mr. SCHEUER.** Look, we are engaged in an abstract exercise here. What I thought the witness was saying is that, if you do something to protect the environment or protect health, like the business of asbestos and mining, that is not inflationary because it is a social good. I think we have to go further than that. I think we have to measure the amount of improvement in health and in environment and safety on some kind of rational judgmental process.

Maybe we cannot fine-tune our thinking, but at least we have to apply some kind of rough judgments as to whether this add-on to the manufacturing process to achieve this result in terms of environment or health or safety is worth it. We cannot avoid making that judgment by saying that anything that goes to improve anybody's health or anybody's environment or anybody's safety is ipso facto noninflationary and——

Dr. **Ashford**. I think we are arguing semantically. I think there are two separate questions. I do not want to belabor the point. The point is that inflation has an onus associated with it.

I do think that we should ask whether price rises deliver a suitable benefit as a general question——

Mr. **Scheuer**. That is all I am stating.

Dr. **Ashford**. What I am trying to do is carry forth the lesson of Prof. Charles Schultze and to ring his words clear in these halls that you should not regard price rises necessarily as inflationary. It is a technical misuse of the word inflationary. I think we should just go on.

It is not that I disagree that we need to ask what you get for the increased cost of production.

With regard to estimating the costs of regulation, it is often assumed that, because the costs of complying with regulation can be easily monetized, they are reliable estimates of the true costs. Unfortunately, there are many instances in which the costs are not only uncertain but unreliable.

Agencies depend to a large extent upon industry data to derive estimates of compliance costs. I do not believe I am being too unkind in questioning the bias of those estimates. The regulatory agencies themselves do not have access to the information concerning alternative products and processes and resulting costs which would enable them to come up with the best estimates of the costs of compliance.

In addition, compliance cost estimates often fail to take three crucial issues into account. First, there are economies of scale which arise in the demand-induced increases in the production of compliance technology. Second, is the ability of a regulated industrial segment to learn over time to comply more cost effectively—what the management scientists call the learning curve.

Third—and it is a critical issue—compliance costs based on present technological capabilities ignore the crucial role played by technological innovation, which yields benefits to both the regulated firms and to the public intended to be protected. Indeed, environmental regulation has been called technology-forcing by the courts and by analysts.

The costs of compliance should not be based on static assumptions about the firm and its technology. Otherwise, a large overestimation would result.

An examination of the minimal effects of the OSHA vinyl chloride standard on the private sector is a striking example of how different the actual economic impacts can be, compared to the ominous preregulation predictions on the part of some analysts of the economic demise of the industry.

I want you to remember that regulation for vinyl chloride would have failed a cost-benefit test because the data available indicated that the costs would have been so grossly incredible—had they been believed—that the regulation would not have been justified.

There are problems with estimating the health, safety, and environmental benefits as well as the costs of regulation.

Mr. **Scheuer**. I did not get that last point. Would you sort of elaborate on that last sentence?

Dr. **Ashford**. The analysts hired by industry to calculate the economic impact of the vinyl chloride OSHA standard predicted that 2 million workers would be put out of work and that the industry would be seriously crippled. That was the prediction. That was the cost-benefit analysis. That was the data——

Mr. **Scheuer**. That was whose cost-benefit analysis?

Dr. **Ashford**. That was the independent consultants, contract research organizations estimate—of a well-known consulting group in the management area.

The facts are that the industry did not reach its demise. The price rise per pound of vinyl chloride is almost imperceptible and compared to, say, energy feedstock caused changes is inconsequential. Two million people were not put out of work. It was something on the order of a hundred in plants that were on the verge of collapsing because they were old. In fact, in the Wall Street Journal, a tabloid not known for its leftist tendencies, there was an editorial entitled "Industry Cries Wolf on Vinyl Chloride."

I just want to caution you that the cost-benefit methodology and the cost estimates are in the hands of the regulated industry. It is unreasonable to expect that you are going to get even-handed information.

Mr. **Scheuer**. Well, is it not up to the regulators to do their own cost-benefit analysis?

Dr. **Ashford**. How much do you want to pay for information? I think that is one point that I want to come to. To impose a quantitative analysis will be a nice way to hire more economists in the Nation, but I am not sure it will serve any other purpose. That is, the cadre, the army of technical experts in this area that you need to get that information—to use a term—the costs of that may outweigh its benefits.

Mr. **Scheuer**. We have developed whole new cadres, whole new categories of experts because the Government felt there was a need to develop that expertise. For example, a decade ago there were practically no experts—you could name them almost on the fingers of your hands—in the field of criminalistics, in the field of criminal justice, in the area of what makes people in communities crimeogenic, and what we do about crime-ogenicity.

A decade ago there were virtually no graduate schools of criminal justice in this country. Now it is a well-known fact of life—and I am not sure whether this is the Eckhardt law or the Scheuer law or Murphy's law—when a government sets up a funding mechanism, all kinds of experts appear out of the firmament.

Could it not be that, in the field that we are talking about now, if Congress really lays it on to the regulatory agencies to perfect a discipline of risk-benefit analysis such expertise would be developed?

You can just see from the discourse between you and myself that I have a long way to go before I am at the point of making intelligent, thoughtful, professional judgments.

Is it not possible that, if there is a real social need for this and we perhaps do set up some funding mechanisms—and maybe we should give the regulatory agent some discretionary funding to put together aggregations of professional expertise themselves—that, over a period of 5 or 10 years or perhaps even less, we will be far in advance of where we are now?

Maybe we are at the point of development in the field of cost-benefit analysis that we were 10 to 15 years ago in the field of sophisticated application of scientific discipline in the field of criminal justice. Maybe we are just at the beginning.

Dr. ASHFORD. I wish that that were true. I believe, for reasons that I hope to make clear, that would be a social misallocation of resources. There are reasons—and I hope to be able to persuade you—honestly, why that is not a good idea. In some areas it might be a good idea, but in this area it is not a good idea.

We have heard about how difficult it is to quantify benefits. The theories of cancer causation and accident prediction are certainly underdeveloped. We scarcely need reminding of the unanticipated risk which attended the incident at Three Mile Island or the failure to predict design defects in the DC-10. It is true that both costs and benefits of regulation are beset by uncertainty and the lack of certain models, but the uncertainty attending the benefit calculation is, unfortunately, usually much larger.

You see, there is no organized interest group, Congressman Scheuer, which systematically pursues the benefit estimations——

Mr. SCHEUER. The point is, do we need this?

Dr. ASHFORD. Let me get to that. I will tell you why it is not good enough—there is no organized interest group which systematically pursues the benefit estimations.

In the same way in which the costs of compliance are researched. The tendency by analysts to rely on hard numbers places the estimates of benefits on insecure ground, softer numbers are harder to believe. That is the brute fact of life.

The research contract organizations which abound in my city, Boston, and which abound in many places have not contributed significantly to developing the benefit methodology because there is no organized constituency. There is no trade group promoting the benefits of air pollution.

Finally—and this is critical—it must be realized that the benefits derived from direct regulation are only a part of the benefits that can be derived from the regulatory process. Indirect or leveraged benefits are derived from the pressure of regulation to induce industry to deal preventively with unregulated hazards, to innovate, to find ways to meet the public's need for a cleaner, healthier environment while maintaining industrial capacity.

To put it another way, the positive side effects accompanying regulation need to be included in a complete assessment of the effectiveness of the regulatory agencies' strategies.

An example of leveraging that I am talking about is apparent in the observation that chemical companies are now routinely conducting short-term tests on new chemicals for possible carcinogenic activity even though no general regulatory requirement exists. You see, the benefit——

Mr. SCHEUER. That is not true. There is a general regulatory requirement——

Dr. ASHFORD. No.

Mr. SCHEUER. In the Toxic Substances Act for a premarketing report on new chemicals.

**Dr. Ashford.** No, no. What is required is, No. 1, that the health data that exists be submitted.

**Mr. Scheuer.** That's right.

**Dr. Ashford.** Second, when EPA gets around to telling people what tests they should conduct, maybe some of those tests will be the short-term tests.

What I am saying is, before any of those regulations have been set, companies are already voluntarily doing it. We know that.

This is critical. Regulation is not about benzene and about lead and about seat belts. Regulation is about changing the nature of industrial production in this country, a system of industrial production that ignored—and we all admit this—carcinogenic or safety hazards for years.

We have got to change the way we do business. It is going to take a decade to do so. The way we do that is to give strong signals that, where we can police it—and we cannot police everywhere—we mean business. The fallout of the benzene decision is not just benzene. It is how we handle toluene, how we handle solvents, how we handle other things.

If you are really going to do a cost-benefit audit and you are going to use a cost-benefit equation, then the fallout—the benefit of regulating benzene is not from benzene alone; it is the leveraging effect. It is just like the Internal Revenue Service audit. It audits a certain number of returns every year. You would not ever think of measuring the success of the Internal Revenue Service by the amount of fines it collected because you know the real payoff is in the voluntary compliance that every citizen executes in filling out his tax return. That is the real payoff. A cost-benefit methodology isn't going to get you those numbers.

So, you see, you have got the proverbial drunk-under-the-lamppost problem. You go along and you see your friend who is drunk looking for his wallet. And you say: Gee, I'll help you find it. You spend an hour. You develop tremendous lighting techniques, atomic emission spectroscopy, and all the things in the world to look for his wallet. And then you ask him: did you lose it here? "No, I didn't lose it here; I lost it at the beach, but the light's better here."

You see, the light is better in the simple reductionist approach to problems. The light isn't so good where the real problem exists.

Let me expand and tell you where the real problem exists. And I think I can persuade you. It is not only that it is difficult to quantify costs and benefits, but there are other things that come in here that make the technique like looking under the lamppost for the wallet that is not there.

Even if we could accurately estimate the amount of disease or injury prevented by regulation and the compliance cost of doing so, the tasks of monetizing health benefits and comparing those benefits to current compliance costs are fraught with difficulty. We have talked about the fact that you cannot place monetary value on human lives. Some analysts today still insist on expressing health and safety in monetary terms; others are departing from this view.

What you hear as a successor index is the magic benefit-to-cost ratio, that is, the number of fatalities prevented per dollar expended. Now, this sounds ostensibly sensible: How many lives do you get per dollar expended? You don't have to monetize human life to get that ratio.

The problem with this index is it can never really be applied. The benefits of regulation do not just include deaths prevented. It includes diseases and injuries prevented, pain and suffering prevented, hospital costs prevented. The benefit side of the equation alone—that is, the numerator in the benefit-to-cost ratio—is filled with apples and oranges. How do we decide how many serious injuries one death is worth? You cannot even construct a benefit-to-cost ratio in a complex problem that is sensible.

The problem of discounting that was mentioned turns out to be an extremely serious issue. What discount rate? How do you discount over time the benefits that occur over a number of years? The manner in which the discounting problem is handled can alter the comparisons of costs and benefits and render the use of a cost-benefit ratio as a decision rule highly suspect, even when it is used between alternative regulatory strategies.

You hear the plea, "Let's get the most health for the buck." Say we can regulate hazard A or hazard B or hazard C or hazard D. These hazards pay off at different times in the future, depending upon how long it takes cancer to develop, chronic respiratory disease to develop, and so forth.

The present value of the net effects of any regulation or the rank ordering of the effects of alternative regulatory regimes—A, B, C, and D—can change markedly, depending upon the discount rate that you use. In other words, you can change the relative attractiveness of whether you do A, B, C, or D, depending upon whether you think you should discount future lives at 7 percent or 8 percent or 2 percent or 3 percent. So, you see, you cannot rely on an artificial benefit-to-cost ratio for deciding the attractiveness of alternative strategies.

The most serious limitation of the traditional comparison of cost and benefits is that it ignores the equity implications, the fairness implications of the fact that costs and benefits are often borne by different groups of people and firms.

Finally, the comparison of costs and benefits must be in turn—and this is really important—compared against what might have happened in the absence of that regulation.

For example, if we were to estimate the benefits and the costs of adopting a safety standard for a consumer product like the asbestos in the hair dryers, we must ask whether the producer industry might not have made the product somewhat safer in the absence of regulation in response to increasing threat of products liability suits. In this example, it would not be correct to attribute to regulation either all of the costs expended or all of the benefits conferred. What alternative scenario would have happened and which one the evaluator chooses can make the actual regulation look better or worse, you see.

So, unless we have an alternative scenario—what would the world have been like had we not had asbestos regulated in hair dryers? Unless you know that, doing a cost-benefit analysis of the expenditures and the benefits does not tell you what effect regulation had.

This is the most serious defect of constructing——

Mr. **SCHEUER**. I have heard everything you have said. I must say I am impressed with everything that you have said, as to the enormous complications and the infinite possibilities and the extraordinarily sensitive and complicated factors that have to be cranked into the equation.

But, on the bottom line, I have the feeling that your position is a classic example of the perfect being the enemy of the good. Let me tell you, as a matter of practical fact, the realities here where we sit. Congress is not going to permit the regulators to continue in their merry way as they have been proceeding. There are going to be some constraints. There are going to be some limitations. There are going to be some parameters. You really have to take that as a given.

Dr. **ASHFORD**. Sure.

Mr. **SCHEUER**. What Congressman Eckhardt and I are trying to do—and we are really not known as being among the more conservative Members of Congress; we are really not psychologically and temperamentally of the opinion that government is always intruding into the lives of citizens. But we are trying to be sensitive to the currents out there that tell us: Hey, it better be sensible; it better be just, logical, and practical.

We know that there are going to be constraints. What we are looking to you professionals for is some disciplined and orderly and socially responsible way of helping the regulators make these decisions.

What you are saying is, because they cannot be perfect, because they cannot contemplate every one of infinite variety of circumstances and options and alternative scenarios, you cannot do anything.

And what we are asking for is, help. What we are saying is, help us. We may not be able to give the regulators a perfect instrument, but cannot we give them something more than what they have got now?

Dr. **ASHFORD**. Let me try to help you because I appreciate the issue of accountability.

Let me just say that it would be useful to keep in mind the charge that regulators have been unaccountable or irrational may be incorrect. What you really may be feeling is the fact that regulation is beginning to work and the bills are coming in.

Let me jar this whole discussion, if I may, by pointing out a fact. I think a rational decisionmaking process already exists in the agencies. But it is not according to the rule that you have been listening to. That is, it is not according to the rule of, let's maximize health for the dollars.

On the first hand, it might sound wrong. Any rule that does not maximize health for the dollar sounds really like a crazy thing to do. Let me persuade you that it is not a crazy thing to do. Let me convince you that the agencies have been paying attention to a rule which makes sense because it is your rule.

In the current energy situation—and I don't want to talk about health for a moment; I want to give a different example—would you demand of the New England Power Co. that it deliver the cheapest electricity to the consumer? It might sound like a sensible thing to do, except when you realize that the most serious problems facing a power company is not the price of electricity to the consumer but to prevent blackouts in Harlem and Roxbury in Boston and like areas. That is, what you tell the power company to do is not to deliver the cheapest possible electricity but to avoid brownouts.

In other words, you minimize certain tragic events. That is what you do in energy: you avoid problems in the Northeast. You avoid gas lines in Washington. You avoid a shortage in the Midwest even if that ends up costing slightly more.

The point is that agencies do consider not just the payoff but the distributional consequences of regulation. Let me give you a simple example.

If you had the choice between two alternatives of either increasing the life expectancy of 10,000 workers or consumers by 1 year, which would give you a payoff of 10,000 man-years, or else increasing the life expectancy of 1,000 workers—a smaller number—by 8 years, giving you 8,000 man-years, which would you choose? 8,000 man-years is much less than 10,000 man-years. Yet, if you are going to deprive 8 years of life for 1,000 workers, that is really repugnant to you. You will opt to avoid the more tragic event, even though it does not maximize your payoff.

You see, who is harmed and the extent to which individuals bear the burden really enters into the decision. It is a question of fairness. It is a question of distribution. In making these choices, the decisionmaker considers the concern and loss that society feels when the more tragic events occur. Because health and safety benefits are not maximized or because a unique decision rule does not exist does not mean that these decisions are irrational.

Mr. **Scheuer**. The regulatory agencies make decisions of that kind every day of the week, and we have accepted them. It may be part of an informal process, but nobody says that utilities should not have a fail-safe system for avoiding brownouts and blackouts. We know that is part of the component of our rate increases, but nobody objects to that.

I think that most of the things that you have mentioned in principle are accepted.

Dr. **Ashford**. They are not accepted in cost-benefit analysis. That is the point to see. Cost-benefit analysis, Congressman Scheuer, has slipped one in on you.

Mr. **Scheuer**. Maybe what you are saying is that we need to have two levels of cost-benefit analysis. Or maybe what you are saying is that we have to expand the benefit section of our cost-benefit analysis to look to social benefits, to look to long-term benefits, to look to equity benefits.

It really is not helpful to say you simply cannot have a more disciplined way of looking at these decisions than what we are doing now. We know that there are some horror stories. I think you would agree that you have heard horror stories in OSHA and other agencies that, by none of the criteria that you have mentioned, will be acceptable policy.

What we are trying to do is create some kind of a discipline, some kind of an organizational approach that will help the regulatory agencies avoid these occasional aberrational decisions.

**Dr. Ashford.** I do not think they are aberrational. I am trying to get you to see that special concern for certain groups is not necessarily aberrational. For example, if we had banned saccharin—the most compelling result for banning saccharin is not even talked about. That is the fact that children consume a much higher proportion of it. Those children who buy over the counter do not make rational decisions.

Had we had our heads screwed on correctly, we would have not treated saccharin the way we did. The adult question is a separate question.

[Testimony resumes on p. 89.]

[Dr. Ashford's prepared statement follows:]

# THE USEFULNESS OF COST-BENEFIT ANALYSIS IN DECISIONS CONCERNING HEALTH, SAFETY, AND THE ENVIRONMENT*

by

Nicholas A. Ashford, Ph.D., J.D.

My name is Nicholas A. Ashford. I am Associate Professor of Technology and Policy and Assistant Director of the Center for Policy Alternatives at the Massachusetts Institute of Technology. I serve as a public member and chairman of the National Advisory Committee on Occupational Safety and Health, which advises and monitors the actions of both the Department of Labor and the Department of Health, Education, and Welfare in carrying out the Occupational Safety and Health Act. I also serve on the Science Advisory Board of the Environmental Protection Agency, which serves a similar function for that agency in carrying out many pieces of legislation including the Clean Air and Water Acts, pesticide legislation, and the newly enacted Toxic Substances Control Act. Today, I am appearing in a personal capacity and not on behalf of MIT or the advisory organizations.

I am particularly pleased to be here today to address the usefulness of cost-benefit analysis in decisions concerning health, safety, and the environment. In the last few years, I have carefully examined the records of the regulatory agencies concerned with these problems and have developed a detailed methodology for evaluating the impact of regulatory decisions. This research was performed under the sponsorship of the Council on Environmental Quality and the Environmental Protection Agency and will soon be published.

Although I have spent much time developing a comprehensive methodology for environmental decision-making, I have come today to offer words of caution about the potential misuse of analytical techniques in this area. My remarks will address both methodological flaws in the state-of-the-art of cost-benefit analysis and the possible political misuse of the results.

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*Based on Testimony presented before the Subcommittee on Oversight and Investigations and the Subcommittee on Consumer Protection and Finance of the Committee on Interstate and Foreign Commerce, U.S. House of Representatives, July 30, 1979.

In my comments today, I would like to make the following six major points:

- There are important differences between economic regulation and environmental or safety regulation which must not be overlooked in constructing evaluative criteria.
- There are serious problems in calculating both the costs and benefits of proposed regulations, but the problems are different.
- The comparison of costs and benefits within a cost-benefit framework is beset by serious difficulties. Cost-benefit analysis deceptively appears as a neutral methodology.
- It is crucial to distinguish between using cost-benefit analysis as a decision tool and using it as a decision rule to guide agency action or evaluate agency performance.
- It is important to realize that some regulatory reform efforts are undemocratic attempts to reorient legislative mandates in which the balance between environmental protection and economic burden has already been struck by the Congress.
- It is essential to recognize the hidden dangers in the present Congressional proposals to require regulatory impact analysis -- even those which are motivated by a pure heart.

## Differences Between Economic Regulation and Regulation of Health, Safety, and the Environment

Economic regulation seeks to improve the working of the market for goods and services by encouraging competition, economic efficiency, and the diversity of available goods and services. Regulation addresses itself to this goal by attempting to ensure that the price mechanism operates efficiently to allocate goods and services properly among economic sectors and between producers and consumers. Economic regulation, properly carried out, thereby is expected to reduce the price of goods and services it seeks to regulate.

Health, safety, and environmental regulation attempts to ameliorate the adverse consequences of market activities, and technology in general, by reducing the attendant social costs. This regulation attempts to internalize the social costs of production by ensuring that the prices of goods and services reflect the true costs to the society. This means that prices in many cases can be expected to go up. Charles Schultze, in his now famous work with Alan Kneese entitled Pollution, Prices, and Public Policy, has cautioned us not to regard price rises which internalize social costs as inflationary.

The requirement that all price rises be viewed as inflationary by the early Presidential directive of Gerald Ford ignored the crucial distinction between economic and environmental regulation. With economic regulation, price rises may well be inflationary and an indication that the government efforts need to be examined. On the other hand, with environmental regulation, price rises may be a measure of success. We must be careful not to use inappropriate criteria as facile indices of regulatory activity. Environmental regulation is not really an instrument of economic policy; it is an instrument of social policy concerned with the distribution of effects that result from industrial activity. Therefore, environmental regulation cannot be judged by economic criteria alone.

Inflation is a phony issue in the national debate over environmental, health,and safety regulation. This is so not only because price rises are not necessarily inflationary, but also because actual estimates of the effects of regulation on the Consumer Price Index by several groups, including the President's Council on Wage and Price Stability and the President's Council on Environmental Quality, place the effect at well below 1% (0.2 - 0.75%) in a time of double-digit inflation.

## Problems with Estimating the Costs of Regulation

It is often assumed that, because the costs of complying with regulation can be easily monetized, they are reliable estimates of true costs. Unfortunately, there are many instances in which the costs are not only uncertain, but also unreliable. Agencies depend to a large extent upon industry data to derive estimates of compliance costs. I do not believe I am being too unkind in questioning the bias of those estimates. The regulatory agencies themselves do not have access to the information concerning alternative products and processes, and resultant costs, which will enable them to come up with the best estimates of the costs of compliance. In addition, compliance cost estimates often fail to take three crucial issues into account: (1) economies of scale which inevitably arise in the demand-induced increase in the production of compliance technology; (2) the ability of a regulated industrial segment to learn over time to comply more cost-effectively -- what the management scientists call the learning curve; and (3) compliance costs based on present technological capabilities ignore the crucial role played by technological innovation, which yields benefits to both the regulated firm and to the public intended to be protected. Indeed, environmental regulation has been called "technology-forcing" by the courts and by analysts. The costs of compliance should not be based on static assumptions about the firm and its technology. Otherwise, a large overestimation will result.

An examination of the minimal effects of the OSHA vinyl chloride standard on the private sector is a striking example of how different the actual economic impacts can be, compared to ominous pre-regulation predictions, on the part of some analysts, of the economic demise of the industry.

## Problems with Estimating the Health, Safety, and Environmental Benefits of Regulation

The state of the art in estimating the numbers of cancers or cases of chronic disease prevented -- or even injuries -- is in its infancy. Many health professionals believe that there is no safe exposure to a carcinogen as a result of the accepted view of the mechanisms of cancer causation. Safe levels for chronic toxins which are not carcinogens are often derived from either acute human exposures or high-dose animal experiments. The extrapolation techniques to lower doses for chronic human exposure are imperfect. Therefore, benefit calculations for a particular maximum exposure level allowed under regulation are often not very meaningful. Theories of accident prediction do not serve us much better. We scarcely need reminding of the unanticipated risk which attended the incident at Three Mile Island, or the failure to predict design defects in the DC-10. Both costs and benefits of regulation are beset by uncertainty; however, the uncertainty attending the benefit calculations is usually very much larger.

It is fair to say that the state of the art in benefit estimation is much less developed than the methodologies for calculating compliance costs. In addition, there is no organized interest group which systematically pursues the benefit estimations in the same way in which the costs of compliance are researched. The tendency by analysts to rely on hard numbers places the estimation of benefits on insecure ground. Softer numbers are harder to believe.

Finally, it must be realized that the benefits derived from direct regulation are only a part of the benefits that can be derived from the regulatory process. Indirect, or leveraged, benefits are derived from the pressure of regulation to induce industry to deal preventively with unregulated hazards, to innovate, and to find ways to meet the public's need for a cleaner, healthier environment while maintaining industrial capacity. To put it another way, the positive side effects accompanying regulation need to be included in a complete assessment of the effectiveness of the regulatory agency's strategies. An example of leveraging is apparent in the observation that chemical companies are now routinely conducting short-term tests on new chemicals for possible carcinogenic activity, even though no general regulatory requirement exists.

## Problems in Comparing Costs and Benefits Within a Cost-Benefit Framework

Even if we could accurately estimate the amount of disease or injury prevented by regulation and the compliance costs of doing so, the tasks of (1) monetizing health benefits which may accrue far into the future (or even monetizing current safety benefits from reducing accidents) and (2) comparing those benefits to current compliance costs are fraught with difficulty. A human life or a lost limb does not have an established unique market value. Payments to workers to assume risky occupations prior to their being injured (an ex ante valuation) are different than the values placed on the injured workers by their families after the injuries have occurred (an ex post valuation). Which valuation is correct? The work of Fischhoff, Kasperson, Kunreuther, and others amply demonstrates the inability of people and firms to consistently value and assume long-term, low probability risks. These characteristics of risk assumption leave a market valuation of the benefits of regulation in great doubt.

There is another crucial problem with regard to valuation. The person who values or is willing to assume a risk, assumes that risk in a way which reflects the bundle of economic goods he/she comes into the marketplace with. It is naive to talk about workers who sell their wages off for their health as if that were something that were derived from first principles. A worker sells his wage off for his/her health cheaply if he/she does not have a large bundle of economic goods. On the supply side, the selling price is determined by the whole set of economic goods the worker has. If you think it is unfair for poor people to sell their wages off more cheaply than wealthy people, then you do not like the working of the market. If you do not care, then you are willing to allow the working of that market mechanism. It comes down to a fundamental issue of the distribution of wealth. You cannot avoid that issue. Economic efficiency reflects the maintenance of the current economic arrangements, and decisions made by the market are themselves value-laden. You cannot be indifferent to the distribution of wealth, and the fact is that the distribution of wealth determines at what price risk is assumed. To ignore equity is to consider equity irrelevant. Deciding what a life is worth by market criteria is value-laden itself.

Some analysts today still insist on expressing health, safety, and environmental benefits in monetary terms, although this is changing. The successor index to evaluating a change of net social welfare in dollars is the benefit-to-cost ratio, e.g., the number of fatalities prevented per dollar expended. The problem with this index is that it can never really be applied. The benefits of regulation include deaths prevented, diseases and injuries prevented, pain and suffering prevented, hospital costs prevented, etc. The benefit side of the equation itself is composed of many elements of different character. How do we decide how many serious injuries are equivalent to one death?

Other problems exist in comparing costs and benefits which raise doubts as to the usefulness of using traditional cost-benefit analysis as a decision-making tool in the regulatory area. Already discussed was the problem of correctly estimating compliance costs, the problem of monetizing the benefits and the problems of dealing with these kinds of valuations in the face of great uncertainty. An additional problem is discounting, over time, both the benefits and the costs. There are three different approaches to the discounting of non-monetizable benefits, such as the reduction of adverse health effects:

- discount the health benefits at the same discount rate used in the monetary benefit or cost calculations;
- discount the health benefits but at a lower discount rate than that used in the monetary benefit or cost calculations;
- do not discount health benefits at all.

The first approach would apply the traditional present-discounted-value criterion to non-market items. The approach has the advantage of allowing parallel treatment of all costs and benefits. Any positive discount rate would value one year of health impairment saved in an early year higher than one year of impairment saved in later years. For example, if the discount rate is 7%, then one year of health impairment prevented today would be equivalent to 1.4 person-years of health impairment prevented in five years, or two person-years of health impairment prevented in 10 years, or 7.7 person-years of health impairment prevented in 30 years.

The second approach would allow for discounting of non-monetizable benefits, but at a lower discount rate. This approach can be defended in terms of a belief that certain amenities, such as health, become more valuable relative to other goods in this society as time passes and the standard of living improves. The following relationship would separate the factors affecting the present value of health impairment prevented in year n:

$$\frac{x(1+\varepsilon)^n}{(1+r)^n}$$

where: $x$ = metric, expressed in person-years of health impairment prevented in any one year

$\varepsilon$ = fractional annual increase in value of health impairment prevented

$r$ = annual discount rate

For small values of $r$ and $\varepsilon$, this is equivalent to:

$$\frac{x}{(1 + r - \varepsilon)^n}$$

Thus, the "effective" discount rate $(r-\varepsilon)$ will be less than the discount rate used for monetary benefit or cost calculations. (Note, that in principle if the society's valuation of health benefits increases rapidly, the effective discount rate for benefits could even be negative!)

The third approach would not discount non-monetizable benefits but simply leave them expressed in natural units with a note as to the time-distribution of their realization. The desirability of this approach can be reached from two considerations.

First, there is a question of the appropriateness of applying a discount rate to consequences of an action which has significant beneficial effects on future generations.* Clearly, any positive rate of discount will discriminate in favor of choices that involve adverse impacts on later generations but not on earlier ones. The benefits of environmental, health, and safety regulation often extend beyond the current generation who bears the monetary prevention costs. If the decision-maker is concerned with intergenerational equity then an argument could be made that the appropriate social rate of discount is zero (not including inflation).

Secondly, the "benefit" of removing a person now from risk of future damage, which is irreversible, inevitable, and non-arrestable once the risk exposure occurs, can be considered to be a present benefit --and quantified, for example, as the benefit of removing those presently at risk from future harm.

The manner in which the discounting problem is handled can alter the comparison of benefits and costs and render the use of a benefit-to-cost ratio as a decision rule highly suspect, even when used to decide between alternative regulatory strategies on health investments.

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*A complete adoption of this argument might not allow for discounting of costs where the benefits are received currently and the costs are incurred in later generations.

The present value of the net effects of any given regulation, or the rank ordering of the effects of alternative regulatory regimes, can change markedly depending upon the discount rate used in the cost-benefit calculation. For example, using a discount rate of zero for future health benefits (i.e., not discounting future health benefits) may make a regulatory choice tenable while using a discount rate for health benefits comparable to the discount rate for capital expenditures may show a proposal to be undesirable.* Further, since the consequences of many regulatory actions may be to impose compliance costs today in order to bring about health benefits far into the future, the choice of a discount rate can make one regulatory option look better or worse than an alternative, depending on the magnitude of the discount rate. Since there is no consensus on what that rate should be, the policymaker's preferences for a particular regulatory option can, but should not, be hidden in the choice of a discount rate.

An even more serious limitation of a simple comparison of costs and benefits is that it ignores the equity implications of the fact that the costs and benefits are often borne by different groups of people and firms. It should be noted that the aggregation of costs and benefits without consideration of equity is value-laden itself. It is a decision to ignore equity.

Finally, the comparisons of costs and benefits of a regulation must in turn be compared against what might have happened in the absence of that regulation. For example, if we were to estimate the benefits and costs of adopting a safety standard for a consumer product, we must ask whether the producer industry might not have made the product somewhat safer in the absence of regulation in response to increasing products liability suits in the courts. In this example, it would not be correct to attribute to regulation either all of the costs expended or all of the benefits conferred. What alternative scenario the evaluator chooses can, of course, make the actual regulation look better or worse. Unless we have an alternative universe that we can even begin to define for analytical purposes, evaluations of the effects of a regulation are on very shaky ground. These inherent limitations of cost-benefit analysis render these techniques highly suspect for social decision-making.

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*The problem is exacerbated when a market/institutionalized "price" exists for the health benefit. For example, an asbestos-using firm may either install a ventilation system today to get rid of asbestos or instead pay compensation costs thirty years from now when a worker develops cancer. What should the rational owner of a firm do? The owner can have the use of his money for thirty years, send a worker's children to school, bury him in a gold coffin, and still be ahead financially. Will traditional economic analysis provide a correct answer?

## The Limitations of Cost-Benefit Analysis as a Decision Tool

What emerges from an examination of federal health, safety, and environmental regulations is that a rational decision-making process does, in fact, exist. The regulatory mandates require application of considerably more sophisticated and appropriate decision rules than those which have been naively suggested as regulatory reforms by some critics. The factors which enter in are: (1) how serious the hazard is, (2) who are the recipients of the costs and benefits, (3) what costs of regulation are imposed on the beneficiaries of the regulation, and (4) how informed and voluntary is risk assumption.

In general, it appears that agencies do consider the distributional and social cost consequences of regulation. For example, when given the choice between two alternatives of either increasing the life expectancy of 10,000 workers/consumers by one year or increasing the longevity of 1,000 workers/consumers by eight years, an agency may choose to avoid the more tragic event. It may opt for the latter alternative although the number of man-years saved is not maximized. When given the choice between two alternatives of either protecting 10,000 workers/consumers from a .1% chance of death or of protecting 100 workers/consumers from a 8% chance of death, an agency may similarly choose the second course even though health benefits are not maximized. In making these choices, the decision maker considers the concern and loss that society feels when the more tragic events occur. Because health benefits are not maximized or because no unique decision rule exists does not mean these decisions are irrational.

Similarly, there is a requirement on the part of an agency concerned with health and safety for minimizing equity regret. Whenever a person is not fully compensated for a loss, a question of equity arises. Also, when a person is forced to incur losses that others are not selected to incur, this too is unfair. An agency may seek to avoid unfairness. For example, it is conceivable that asbestos might be banned from use as a brake lining with the result that more lives are lost on the highway (due to less braking effectivensss) than are saved in asbestos manufacturing operations. The asbestos workers are, however, a non-voluntary, selected group exposed to harm that others in society are not forced to incur. Community ties and family relations may restrict the workers' job mobility for generations and prevent them from leaving the group. Further, if asbestos workers are already a disadvantaged group in society, an additional equity consideration is brought to bear. A consideration of equity along all these lines might justify the increase in the loss of lives on the highway in fairness to the asbestos worker.

The fact that both costs and benefits may be characterized by different degrees of uncertainty has already been mentioned. Clearly, comparing point (single) estimates of costs and benefits is incorrect. Costs and benefits streams must be expressed as distributions, a demand not usually possible from the data -- especially for benefits. If the distribution of risks (health benefits which might be achieved by regulation) contains an especially sensitive subgroup of potential beneficiaries -- e.g., children -- then equity considerations may lead an agency or society to more highly value the regulation for them, even though they represent a small subset of those at risk -- at the tails of the risk distribution.

The decision rule which environmental, health, and safety agencies try to follow is clearly a concern for equity to workers, consumers, and society -- and the desire to minimize the regret of not regulating a particular activity. This is accomplished by choosing among different hazards to regulate and by choosing a level of protection for a specific hazard which avoids small probabilities of large harm. While not necessarily maximizing the number of lives saved, these decisions are not clearly irrational -- unless rationality is defined tautologically as a maximizing rule.

Unfortunately, these decisions are necessarily complicated. A search for a facile decision rule would in reality absolve regulators from accountability rather than force them to articulate the hard choices.

Regulatory decision-making must go much further than making a trade-off analysis which includes only short-term cost, benefit, and distributional effects traceable directly to a specific regulation. The indirect payoff due to leveraging the private sector to deal with unregulated hazards, the longer-term changes in the legal environment, the effects on technological innovation, and the proper treatment of uncertainty need to be factored in, if a complete rationale is to be developed for regulatory decision-making. There are no facile rules of thumb, no quick fixes, no simple indices of correctness. Until evaluation methodologies can be sufficiently well developed to deal with these additional considerations, it may be unwise to impose upon the regulatory decision makers a requirement to undertake regulatory impact analyses that are overly quantitative and restrictive. What can be entered into a cost-benefit equation is only a small part of the picture. Efforts to improve regulatory decision-making at this time might be better focused at ensuring that the government, workers, consumers, and industry have better access to information as to the nature and extent of health hazards, and information as to the technological capabilities of the regulated industrial segments in being able to respond to regulatory controls.

## Undemocratic Attempts to Reorient Congressional Mandates in Environmental, Health, and Safety Legislation

My testimony so far has focused on the technical difficulties of evaluating regulatory decisions. I feel compelled to caution that some regulatory reformers are not trying to improve the decision-making process, but rather are attempting to reorient Congressional mandates embodied in the different environmental, health, and safety legislation.

There are a number of different benchmarks which the decision maker might use, and hence be evaluated against, to arrive at a particular strategy. They include economic efficiency, cost-effectiveness, health-effectiveness, distributional consequences (equity), and specific legislative mandates embodied in various pieces of legislation. In some legislation, the discretion as how to "balance" the various considerations is broad; in others, it is more narrowly defined. In many instances, criticism of a particular decision to regulate is really a criticism of the balance struck by Congress in empowering an agency to act in a certain manner. For example, attacks on the proposed ban of saccharin or on the standard for occupational exposure to benzene are really attacks on the legislative mandate. By asserting that a standard is not cost-effective or that it is too expensive, the critics are attempting to force an evaluation of the proposed regulation against different benchmarks.

A more serious concern, however, is that assessment of agency economic impact analysis by groups such as the Council of Economic Advisors or the Council on Wage and Price Stability may really be attempts to reorient various legislative mandates to their own point of view of what is desirable. I believe that it is certainly undemocratic, if not dangerous, for a society to let any one group of people, whether scientists, lawyers, or economists, decide that they have a game plan to set national priorities. We cannot be too cautious as to a possible "tyranny of the experts". An open process, without post-hearing maneuvering on the part of influential technical experts, is absolutely essential in this difficult area.

## Proposed Congressional Bills to Provide for Regulatory Impact Analysis

A purpose of the proposed legislation is stated to be that the agency decision-making process should be rational and systematic. If we realize that the health, safety, and environmental agencies have been operating under a rule of minimizing the regret of not regulating a particular hazard, the presumption that the agency decision-making process has not been rational and systematic loses ground. The paradigm forced upon us by the "economic rationalists" to expect agencies to maximize health or environmental payoffs may very well lead to the use of inappropriate criteria.

The definition of a "significant rule" based on an annual effect on the economy of $100 million is a biased criterion. It argues that the cost implications alone determine whether or not an impact analysis needs to be done. It is quite possible that a $100 million regulation with significant offsetting health benefits deserves much less scrutiny than a $50 million regulation with much smaller payoffs. The $100 million rule is an artificial one. [Using compliance costs alone to make up the list of allowable regulations under a "regulatory budget" constraint would likewise be a defective procedure.]

Even though some bills provide that no judicial review is permitted regarding the adequacy of an agency's compliance with the regulatory impact analysis requirements, this does not mean that the analysis will not be subjected to judicial review as a part of evidence submitted in hearings on one of the proposed standards. Thus, the regulatory impact analysis will most assuredly invite more opportunity for contentious and adversary interaction among industry, labor, public interest groups, and government.

The appealing requirement that an agency prioritize its areas for action could lead to serious consequences for the effectiveness of regulation. Establishing and publicizing an investment strategy that prioritizes agency activity by hazard creates a license for industry to neglect areas that it might otherwise improve. For example, no one can seriously believe that it would be sound social policy for the Internal Revenue Service to announce that it will audit returns for six major items and ignore the remainder. The success of an administrative agency depends on far more than its specific enforcement activities. The agency signals, which change general behavior by leveraging voluntary preventive actions by firms and can stimulate technological innovations, are far more significant than its limited specific enforcement record.

Furthermore, regulatory agencies are not investment banking firms; they are politically responsive administrative agencies. They cannot ignore petitions under their legislation for protection from a particular hazard simply because that hazard is not next in line in its priority scheme.

Placing a watchdog role over the administrative agencies in the Administrative Conference, Office of Management and Budget, or other organizations is inviting a further deterioration of the ability of the regulatory agencies to carry out the Congressional mandates free from Executive interference. Neither direct nor indirect Congressional or Executive veto of regulatory initiatives is desirable. Serious thought should be given to leaving the agencies to account for themselves primarily in the courts, in oversight hearings of the Congress, and through other facets of the Congressional process. If regulatory impact analysis is to be required by the Congress, it must go much further in minimizing the potential for misuse and political abuse.

Finally, let me suggest that we do not have a real crisis in regulatory accountability. Rather, regulation is starting to work. The bill for previously ignoring environmental, health and safety problems has simply become due.

Mr. ECKHARDT. Let me interrupt here. The colloquy is very interesting, but I think we ought to spread it around a bit.

Beside that I would like to hear some of the panel discuss some of the questions with each other. At this time I would recognize Mr. Lent.

Mr. LENT. Thank you, Mr. Chairman.

As a Congressman, I am called upon to decide how to spend limited tax dollars. If I do not use the cost-benefit analysis, what method should be used? Is there some alternative to what we are kicking around here?

Dr. ASHFORD. Let me ask you something. You sent your kids out on Halloween night—this is really the crux of the problem. If you sent them out and they came back with a bag full of apples, and you knew that one out of 10,000 apples contained a razor blade, you have three choices: you let your kid eat the apples and you don't do a calculation; you throw the bag out; or you sit down and you do a cost-benefit analysis.

Let me tell you what enters into the cost-benefit analysis: the nutritional value of the apple; the market price of the apple; the probability of your kid biting into the razor blade; the cost of corrective surgery; the psychic cost of a cut lip; and so forth. Let me tell you, if you do the cost-benefit analysis, it makes no sense to throw the apples out because the chances are so small.

What do you do? You throw the apples out and you don't do the calculation. Are you irrational?

The agencies are protecting people from razor blades in apples. That is what regulation is all about. Do you want to have the agencies do what you don't do for yourself? That's the answer.

Mr. SCHEUER. I personally believe that is a gross oversimplification, and it is really not a helpful place for us to end these hearings. You are telling us there is nothing we can do.

Dr. ASHFORD. There is accountability. I am not saying that there is no rational process. The point is, you look at the distribution of risks. You ask if there is a small probability of very high catastrophe such as a nuclear issue. You look to whether or not a product like saccharin is used by thousands or millions of consumers as opposed to smaller numbers.

But the thing that you should not lose sight of is, it is not saccharin, and it is not benzene, and it is not lead that is important. What is important is that we give signals to the industrial community to avoid building a system of food production that forces us to use nitrites. If we never had had that system of food production, we would have ham and bacon produced locally, and you would not need nitrites.

The point is that you have got to change the legacy to future generations. You have got to change the way we have our industrial system organized in production in this country. That is the real payoff.

To focus on saccharin, to focus on lead is myopic. It does not get you the payoff you deserve.

Mr. **Crandall.** Mr. Lent, I wonder if I might interject here and point out to you that Dr. Ashford has in the past suggested a rule which apparently he does not want to own up to now, or maybe it is implicit in his oral testimony and explicit in his written testimony.

That is, I believe he said that regulators ought to minimize the maximum regret from each one of their decisions, which is a technical rule which means as follows: that they ought to take that decision which, among all the possible outcomes listed, has the lowest negative-valued potential outcome. So, for instance, the rule which the Nuclear Regulatory Commission would always follow is that they would never license a nuclear plant because any licensing of a nuclear plant might give rise to some accident. Regardless of how small the probability, the negative value of that accident is so large that it would dominate the decision rule which says: don't ever build a nuclear plant.

So, you would have a very easy time of following his decision rule; namely, you would never build a nuclear facility.

Dr. **Ashford.** That is not the correct use of the rule, Mr. Crandall, and you know that. That is not the application of the rule, and you know better.

The point is that you have a series of hazards—A, B, C, and D—and you minimize the regret of not regulating one of them. Suppose you only have money to regulate one of them; you cannot regulate them all. There are two ways to go about it. You can calcuate the maximum amount of health protection which you get, which I support is the wrong rule; that is not the rule that is followed. Or you can minimize the tragic feeling that you get for not regulating. Which event would you like to avoid the most? Now, what you said is not what the rule is.

Mr. **Crandall.** That is minimizing the maximum regret means. I would suggest to you that there is a way of making that more sensible; and that is subject it to some constraint, namely that you do not want to spend any more of society's resources than $x$. That is essentially what Dr. Lave suggested when he suggested a regulatory budget. In essence, one would give to the agency a maximum compliance cost limitation and let that agency make the decisions so that it balances tradeoffs. In that way, you would get an implicit

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comparison of costs and benefits. You would be making the final judgment as to benefits because you would be setting the limit on the regulatory budget.

Dr. **Ashford**. It is really misleading. When you only use compliance cost as a filter, it is an incorrect metric.

If you believe that in some cases the benefits are less than the costs but they are justified because we want to protect the environment, we want to protect children and so forth—and that is very often the case—then what you want to do is use the net costs, not the compliance costs. That is the wrong filter, Mr. Crandall; isn't it?

Mr. **Crandall**. You want to use all of the costs and all of the benefits. I can't——

Dr. **Ashford**. Let's be sure that the regulatory budget—and the congressional proposals don't talk about net costs; they talk about compliance costs; they talk about one side of the equation. Let's not glibly float over that subtlety because it is absolutely critical.

Now, tell me how to get the net costs.

Mr. **Crandall**. It is not necessary to talk about anything more because what is required then is a debate within the Congress as to what the benefits really are and a congressional vote on how much it is willing to spend in this type of regulation. That is a democratically-reached judgment as to what the prospective benefits of this type of regulation might be.

Dr. **Ashford**. Why limit it to the agencies? Why not make the Congress on every single bill it passes do a cost-benefit analysis? I think the committee report ought to include a cost-benefit analysis on any legislation that exists. I mean, why limit it to regulatory actions? Why not go all the way? I think it would be marvelous.

Mr. **Lent**. When you do cost-benefit analysis of, let's say, a particular proposed regulation, do you also analyze simpler and better and alternate methods of bringing about the same result? In other words, there may be a regulation that would have a positive cost benefit, but there might be another way of regulating that is not even under consideration that would be simpler and more expeditious and have an even higher ratio.

Mr. **Crandall**. That was the intention of President Carter's regulatory reform initiative which specific an economic impact analysis. Each agency was to choose among a variety of potential ways to get to a particular result.

The problem with that is that frequently the legislation precludes analysis of the most sensible result.

Mr. **Lent**. Would you say that the Carter proposal has been successful, or would you say it has not been marked by success?

Mr. **Crandall**. Perhaps you ought to ask others here as well, but I would suggest that whether that analysis is successful or not is difficult to say.

The mechanism chosen is to house within the White House a review of regulations, which can probably only have an effect upon a regulatory agency if the President or one of his chiefs of staff actually brings the case to the regulator and puts pressure on him to change his mind. Whether that mechanism can work or not, I am doubtful. But the regulatory analysis itself may well have had beneficial influences far exceeding just the reach of the individual cases which have been brought before the regulatory analysis review group so far.

Dr. **Ashford.** Mr. Crandall, you are on record as saying something completely different. In the Brookings paper, which you wrote, you indicated that the result of the program was, at best, mixed. You absolutely have contradicted yourself.

Mr. **Crandall.** I said it is an open question yet. I am not convinced that it can work in the current form that it is now promulgated by executive order because I cannot imagine Presidents in the future wanting to go to the mat over whether the effluent guidelines for the electroplating industry ought to be *x* or *y*. It seems to me Presidents have more important things to do. It is not likely that decisions of that sort are going to be resolved in the White House.

I think the requirement that agencies do regulatory analysis despite criticisms that they cannot possibly know how to do it or are so biased that they accept industry estimates unknowingly and with absolute faith—I think that requirement is probably a good one.

Mr. **Eckhardt.** Mr. Broyhill?

Mr. **Broyhill.** I may not be following Dr. Ashford. Is it my understanding you are saying that the agencies should not do a cost-benefit analysis whatsoever?

Dr. **Ashford.** No, I think I made that clear at the beginning. I think, number one, they do already identify costs and benefits where possible. I have looked at the records of these agencies. The records have been good in that regard.

I have indicated that, for example, OSHA with lead did quantify the benefits. With benzene, it was impossible to do so.

What I am asking you to be very cautious about is to make a formal requirement that cost-benefit analysis be done, which is what regulatory impact analysis is.

Mr. **Broyhill.** It would seem to me we are not doing a good enough job. I hear of these ridiculous regulations that come down the stream all the time.

Dr. **Ashford.** Which ones?

Mr. **Broyhill.** Talking about OSHA, for example, they come in and they want to fine you if your fire extinguisher is 6 inches out of line instead of concentrating on things that are more important. Or, for example, they issue a regulation that says that, down in my country, you could not process chickens on a tile floor—which is ridiculous. The classic one was they said that, if you are a rancher or farmer, you had to provide a toilet within a 5-minute walk or ride for a cowboy or farmhand.

This is the type of thing that we see coming out of these agencies. It is no wonder that many of us are concerned about them.

We see another agency right now that is going to require the use of a very dangerous pollutant, sodium azide, in the device that would activate the air bags. There would be literally millions of tons of this substance that would end up in the environment. This is the type of thing.

Mr. **Scheuer.** I would have to correct my colleague there. I do not want to get into the air bag controversy, but I cannot let that stand. it will not get into the environment. It will not get out of the cannister.

There has been a GAO report on that whole matter. In terms of safety, they have given the air bags a clean bill of health. There has been no criticism of the air bags on the grounds that they are going to emit poisonous gases or chemicals of any kind.

Mr. **Eckhardt**. Let us leave the record open for any member to rebut any other member's contention.

Mr. **Fischhoff**. Let me suggest that there may be a different way of looking at these horror stories. We have all admitted that these are incredibly difficult problems for which all of us are somewhat limited both in our technical expertise and in our gray matter, our ability to think them through.

As a result, in any imperfect decisionmaking system, you are going to make two kinds of errors. You are going to make regulations that are not needed; perhaps some of the examples that you just cited are in that category. You are going to miss regulating some hazards that should be regulated.

Just as in any social service system, you are going to find some welfare cheaters if the decisionmaking process is imperfect. But, on the other hand, there is going to be a whole category of welfare cheatees, people who should be getting rights and have somehow fallen through the system.

I think, before we evaluate the system in terms of horror stories, we should look at those two kinds of errors. I do not think anybody has done that analysis.

I think what we really want from cost-benefit analysis is not so much to judge it as a technique in and of itself—which will solve our problems, my perception is that we have general agreement that it will not solve our problems. The question is whether cost-benefit analysis will give us better decisions than we have now. I would suggest that, as one of my colleagues said, the answer may vary from problem to problem.

I think what we have to ask, as the good cost-benefit analysis asks, is, what are our alternatives to cost-benefit analysis? We have a number of alternatives, each of which has something going for it. One might be a much simpler way of achieving most of the goals that Mr. Crandall has asked for.

To take a historical example, Ben Franklin suggested the following decisionmaking procedure. He said: list all of the good things that might come out of a decision, list all of the bad things that might come out of a decision, and then see whether there is more on one side or the other.

Mr. **Scheuer**. Is that not what cost-benefit analysis is all about really?

Mr. **Fischhoff**. Right.

I think there are two important differences between this and a formal cost-benefit analysis. One is that it is a whole lot less pretentious, and it is a lot more likely to give us a feeling for how little we know and understand these problems. Second, it is a whole lot cheaper.

Mr. **Scheuer**. But that leaves out a lot of factors that Professor Ashford thinks are extremely important doing it in that rather simple primitive way. What we are trying to do is factor in most of the values that he very properly adduces.

Mr. **Fischhoff**. I think the critical question is whether we can do a good enough job of filling in all those factors to justify going through all the machinations.

I think that in many situations—certainly not all situations—cost-benefit analysis will create an illusion of understanding. It will obscure what our decisionmaking process is, and we may be worse off for it. The assumptions of cost-benefit analysis are not immediately apparent.

It is always touted as being a very scrutable, analyzable, criticizable system, but it is not. The issues are really very subtle, as the debate we have had here suggests.

Ben Franklin's system makes a number of assumptions that are good. However, it makes a number of other assumptions that might not be so good, like giving equal weights to each component.

I think what we should be considering is how to design a system that will——

Mr. **Broyhill**. If the gentleman would yield, I still do not follow him. He has not proposed a system. Are you proposing that you let the agencies do what they want, that this Congress give them carte blanche authority to regulate in the name of protecting the health and safety of the American people?

Mr. **Fischhoff**. I would not suggest that under any terms.

My question is whether cost-benefit analysis is the way to impose more discipline than there already is. Perhaps what we require is a better hearings system. Maybe we have to improve our legal system. Maybe we have to improve our professional codes of standards for the engineers and economists who are involved in these things. Maybe there has to be more direct oversight from the Congress.

I think what we are seeking here is wisdom. I am not certain that cost-benefit analysis will provide more wisdom than some other regulatory reforms.

Dr. **Lave**. I think Mr. Broyhill asked exactly the right question. I wonder if I can get us off the debate for a second and back to that particular issue.

The question is not that we are not going to make new regulations in the future or that Congress is not going to pass laws. It is: how can we do that best? What is the framework within which we can do that well?

I think that, when Mr. Fischhoff suggests Ben Franklin's rule, he has at least got his tongue in his cheek, if not foot as well. That is, just think of a hearing that went on when sides were trying to list the advantages and disadvantages of doing something.

The problem is that, when you think of any simplistic way of trying to look at the consequences of these events, you immediately start rejecting them out of hand because they are not going to allow regulators to make new laws. Instead, what they will do is prolong hearings indefinitely.

I think that you have to be terribly cynical about the process to believe that what we want is to keep regulators from making any changes in current regulations or making any new regulations at all. That must be the most bankrupt view of government that one can have.

Instead, we would like to have a system that does allow new regulation to take place, that does allow us to learn from our experience. Now, let's try and do that for a second.

I was trying to suggest that the sort of informal systems or informal benefit-cost analyses that are in some of the bills is not going to work. And it is not going to work because the administrative procedures have got to be set down systematically. We cannot have these agencies deciding on the spur of the moment that in this case they are going to use this technique and in that case they are going to use a different technique. We have got to have some order.

That is going to mean in some cases, as Mr. Fischhoff points out, that the wrong technique will be used. What we would have to do is have some relatively uniform technique at least for an agency. We cannot have them suddenly decide they are going to list the advantages on this one and do formal analysis on that. We have got to set these things out somewhat systematically.

I was suggesting that, among the techniques, either the formal benefit-cost analysis or the regulatory budget answers that very well.

Let me also just say that some of the objections that have been raised here are not really all that subtle. They are not getting resolved because, first of all, this is not a forum for resolving intellectual issues of that sort. Second, if we sat down and put these things down on paper, I do not think there would be nearly the kinds of difficulties that have been erupting in the debate. That is a show for you, I am afraid.

We can do much more. We can set out these formal frameworks. I think that, not only does more work have to be done on the methods of benefit-cost analysis, much more work has to be done on the agencies themselves in thinking through the problems systematically.

Dr. Ashford was emphasizing a message to send out to industry. Let me emphasize a message you want to send out to the regulatory agencies. You cannot pull regulation out of the air. You have got to have some systematic analysis.

That does not mean that you cannot issue any new regulation until all the facts are in and every i has been dotted. But it means that you had better sit and think about it systematically.

Dr. ASHFORD. Why do you assume—why does anyone assume that, in today's climate—I am not talking about the early Nixon years, when the environmental agencies were designed to fail and when the OSHA toilet seat standard was adopted from an industry-based standard. I am talking about the last 5 years, when the screaming started because regulation was effective. Why do we have to assume that the agencies are irrational?

I believe they are rational. I believe they are accountable. I believe they do identify who the winners and the losers are.

These decisions are necessarily complicated. I could not disagree more with almost everything that Lester said in the last statement. A search for a facile decision rule would, in reality, absolve regulators from accountability rather than to make them accountable, rather than to force them to articulate the hard choices.

The regulatory agenda is a sham. It is quite possible that a $100 million regulation with a significant offsetting health benefit deserves much less scrutiny than a $50 million regulation with smaller payoffs. You cannot look at compliance costs alone. And that is why you cannot use a regulatory budget. It just will not fly. It is analytically bankrupt.

Mr. **Crandall.** Mr. Broyhill, to follow up on your question of Dr. Ashford, perhaps it should be put to him in this way. He said earlier that at OSHA—and OSHA is his particular area of expertise—the benefits for the lead standard are rather well quantified but the benefits of the benzene standard were, as I think he put it, not quantifiable.

You might ask him how he would, if he were sitting where Eula Bingham sits, decide between 5 ppm, 1 ppm, and 0 ppm. In fact, does he not think it is outrageous that the standard is not 0 ppm since, presumably, there would be some health effects going from 1 ppm to 0 ppm? Or is he telling us that he does not think it is worth going to 0 ppm?

Dr. **Ashford.** Let me answer that, Mr. Crandall, because there is a misunderstanding that you have on how OSHA sets its standards.

OSHA does not decide arbitrarily what to set the level at. OSHA sets the level at the lowest feasible level. One ppm was the level that the Department of Labor determined the technology was capable of achieving. It was not that 1 ppm was safe enough. That is the point.

The point is that you force the technology to where you believe it can respond. That is the best the Nation can do.

Mr. **Crandall.** You mean we would continue an industry which is killing maybe scores of millions of people because that is the best it can do? I mean, we could set a 0 ppm standard and, in fact, close down large parts of an industry. I would think you would be supportive of that.

Dr. **Ashford.** No. Feasibility has to take into account the arising of suitable substitutes, too. It is quite possible that you force a product out of the market if there are products to take its place.

By the way, the courts have given very good guidance to the issue of feasibility. It is the benzene decision in the fifth circuit that is an aberration, and it will fall.

Dr. **Lave.** Let me just say that the implication of what Nick just said is that the Congress instructed the Occupational Safety and Health Administration to put rules in the workplace such that, first of all, it was either technologically feasible now or they believe that the technology could, through innovation, cope with that and, second, that the industry not be bankrupt, not be put completely out of business.

If you believe that is the proper criteria that OSHA should use, then I think that OSHA has been doing a good job. If that is not the proper criteria, if you think that there ought to be some other notion of weighing the benefits against the costs, then OSHA has not been doing a good job.

Let me also say that, when Dr. Ashford was talking about which analyses have been done for OSHA, I think that what one would see is that, under the previous administrator, there were a number of analyses that were done trying to quantify costs and benefits. I am hard put to name the ones that have been done under the current administration.

I think that this is not a matter of what is feasible and what is not feasible. After all, the EPA quantified the risks of benzene—not terribly well, but about as well as it can be done, reasonably well. It is at least as well as the lead standards have been quantified, for example.

I think that you would have to say that this administration is less interested in OSHA in trying to quantify the benefits and the costs than the previous one was.

Mr. BROYHILL. I have no other questions, Mr. Chairman.

Mr. ECKHARDT. Let me get in a few questions here.

It seems to me that we have several areas in which cost-benefit analysis can be performed reasonably precisely and other areas in which it is extremely difficult to make estimates very precise.

For instance, getting away from regulatory provisions for a moment, say that you were going to decide whether or not the Wallaceville Dam will be built. I know this because I have been involved in it. There were three factors on one side: to impound the water; to prevent salt water infusion into ricelands; and, three, to provide navigation to the little town of Liberty, Tex.

On the other side of the question was whether or not to inundate certain swampy lands which were a major nursery ground for shrimp. There is a great shrimping industry in the Gulf of Mexico.

Well, the first three were originally permitted to override the last because there was no very-well-organized group of shrimpers. Ultimately, somebody went to court. The agency had to look into all of the questions. They discovered a way by which the dam could be built only on the east side of the Trinity River, keeping the shrimp grounds, raising the water level by a couple of more feet so as to give plenty of water for impoundment, and keeping a lock to get navigation to Liberty.

That is the kind of thing you can quantify and measure and, ultimately, perhaps come to an equitable solution.

But a second kind of question is somewhat more difficult but not as difficult as what we have been discussing. That is the question of certification. For instance, you want to certify, say, the building of a coal slurry pipeline which may carry with it the right of eminent domain. In a present bill considered by Congress, you have got a number of findings that must be made and must be considered. But the ultimate balance, if the findings are considered, must be determined by the agency itself. I think that makes pretty good sense because, in some instances, even if one of those considerations is totally negative, the others might well outweight it.

Having gone through the process, you can make a kind of Ben Franklin judgment, but not weighing how many factors you have on the one hand and how many on the other.

Now let me give you several other examples, all of which I think are somewhat different.

Should, under the Air Quality Act, Armco Steel be required to expend a great amount of money to build a bag house to remove particulate matter from the emissions from their plant? The bag house is expensive. There are a lot of workers who, say, may have their jobs endangered. On the other hand, the workers may have their health and their families' health and their community's health endangered.

The question of quantifying the cost of the bag house against the respiratory effects of the whole area on the north side of the Houston Ship Channel is not an easy thing to come by. I do not know how you ultimately measure these in exact monetary cost-benefit ratios. But you ought to consider the question and you ought to consider whether there is another way to clean the air besides an expensive bag house.

Another example is, what about the use of aerosol sprays? It has been argued that they produce fluorides that would destroy the ozone layer. Well, we do not know whether they will or not or whether they will within a given time. But, if they did, the results would be enormously disastrous and irreversible.

I think you have another kind of decision there. You have got a decision involving the point of no return. I do not think a precise measure of the cost-benefit ratio can be made. You have got to look at the enormity of the effect if you make a wrong decision. I gather that is somewhat in accordance with Dr. Ashford's rule that we were discussing a moment ago.

Then you have a question of evaluating the holder-in-due-course rule by the Federal Trade Commission. Is it cost-benefit advantageous to provide that, when one buys a used car, the used car dealer not be permitted to sell paper to a bank and avoid the liability for failing to deliver the car or delivering a car that will not run because of a cracked engine?

That is a hard cost-benefit decision to quantify. I suppose that that is ultimately more a political judgment than it is an engineering or an economic determination.

What I am suggesting to you is that I think almost everybody would say that there ought to be some guidance as to what should be considered and what should be taken into account during a weighting of costs versus benefits. But I think some of you are saying that, in some areas, costs and benefits can be measured reasonably precisely and in others they cannot be measured hardly at all and that, ultimately, the process by which the decision is made and the ultimate consideration of the process in a serious and earnest way is the important thing.

I suggest to Mr. Broyhill that we were extremely concerned about this very question when we framed the rulemaking process in the Federal Trade Commission Act. We provided due process in that rulemaking to the point where, before we went to the conference committee, the then Chairman of the Federal Trade Commission called me and said: if you press for this rule, you will ruin the Commission; we will not be able to make a decision for 7 years. I said: well, why didn't you tell me that while the octane rating case was in process and you thought you might lose it?

So, we went ahead and we made the rules. Maybe they are too slow, but at least they require the consideration of arguments made by both sides.

So, I would suggest that you just cannot make a single rule. You have got to treat different processes differently.

I know I am more of a lawyer than I am an economist or an engineer, but I have always had faith in kind of an adversary process in the rulemaking procedure that extends beyond my faith in merely establishing some kind of predetermined weighting of factors in terms of numbers.

I have talked too long. Perhaps you have some comments or arguments among yourselves.

Dr. LAVE. Let me distinguish, first of all, between benefit-cost analysis as a tool and benefit-cost analysis as a criterion.

I would not advocate that the Congress say to agencies that they can promulgate a rule only if the benefits are greater than the costs. I think that would be a travesty.

I think what the Congress ought to say to agencies is that they can promulgate a rule only if the benefits are reasonably commensurate with the costs; that is, some vague language of that sort——

Mr. ECKHARDT. Or have been considered.

Dr. LAVE. Well, no; more than that: have to be reasonably commensurate with. That does not say that the benefit-cost ratio has to be 1.01——

Mr. ECKHARDT. How do you know in a case like, for instance, the holder-in-due-course rule? How could you ever come to that conclusion? How could you ever come to that conclusion, for instance, in a question in which you really do not know whether fluorides would be so concentrated in the upper atmosphere as to destroy the ozone layer?

Do you not have to say that, when you are making a change in the environment, that it is something like changing the genes in a person: about one time out of a million it will be beneficial? And the rest of the time it will probably not be beneficial because the environment and the individual have lived together for about a million years, and they have been pretty accustomed to the situation in which they now exist.

Dr. LAVE. Mr. Chairman, I certainly do not want to play lawyer with you. But, when you said, how would you make sure that the benefits were commensurate with the costs and how would you enforce that, how would you make sure that the agency had considered benefits? Suppose they said that anybody who wishes to have benefits considered can submit them to the record, and the Chairman of the Commission picks it up one day and looks at it and says: OK, I've now considered the benefits.

I do not quite understand in any of these, in anything short of saying that the benefits must be greater than the costs, you are relying on the good will of the independent regulatory agency, whatever it is.

Mr. ECKHARDT. I am speaking somewhat as a lawyer. I recognize that that is not a popular position to be in these days. Samuel Johnson, I believe, said, "I hesitate to speak ill of any man but that man is a lawyer."

If you had this kind of rule, I do not know how you would ever sustain a provision prohibiting the use of aerosol sprays. You could never show that the benefits of the rule exceeded the detriment. All you could show is that there is a possibility of such a dire and tragic and sweeping effect that we simply cannot take the chance.

As a matter of fact, we have the same thing in Toxic Substances Control Act. We have a provision there that we finally engineered in conference as a compromise that provides that there can be circumstances in which a suspect chemical will be produced in such large quantities that it may result in extreme harm, but such harm cannot be absolutely proved. So, we provided that the agency, in those circumstances, could make a rule preventing the chemical from being produced. But that rule, if contested by the company, would withhold the chemical for 90 to 180 days. After that time, the agency would have to go to court and present these questions of balance.

We certainly did not say that, in order to sustain their position, they had to make a determination ultimately that the benefits of the limitation would be greater than the costs. If we had, the agency could never have acted.

**Dr. Lave.** Can I just sharpen it up? I am afraid that you may be under a misapprehension. Let me try and clarify it.

In all of the cases of health regulation that we have now, we almost literally never have evidence that the substance that we are regulating is harmful to human beings in the quantities in which we are talking. In almost every case, we are talking about what are long-term chronic exposures that work the harm—not 1-minute or 1-hour doses that kill somebody on the spot. Of course, if you had a chemical that killed a worker in the ordinary course of an hour's worth of work, you would ban that; but then the company would not be in business anyway. You would not have to ban it.

**Mr. Eckhardt.** If it were a substance which were used in a process which is carefully controlled——

**Dr. Lave.** Sure. But in the course of the ordinary exposure that the worker gets——

**Mr. Eckhardt.** What I am saying is that you have a different question in almost every instance with respect to danger, with respect to use, with respect to ultimate environmental exposure generally.

I recognize that you ought to consider these factors. I recognize that you ought to have a process that permits those affected by the rule to have the maximum say: look, you are way off; there are easier and cheaper ways to do it; we ought not do it this way.

But, ultimately, it seems to me that you cannot establish a pure cost-benefit ratio except within a relatively narrow range of cases.

**Dr. Lave.** I guess I was going to say that in the entire health area that the analytics that we are talking about always deal with extrapolations from high doses that human beings get or animal experiments and try and then figure out what the risk to human beings is. That is a process that always makes people uncomfortable. Yet, it is a process which is very well established in the biomedical community.

The same sort of process applies when you are talking about the emission of fluorocarbons into the atmosphere or you are talking about radiation risks or whatever. That is, the scientific community has well-established rules by which they calculate the risks to individuals.

I do not think any of us sitting in front of you, no matter how much we disagree on other things, would disagree that those risks ought not to be calculated. I think the disagreement then comes as to in what way you should use the risks that you have calculated.

I think that, even in the case where you have relatively little information, I would advocate that you always ought to push people to make the best calculation that they can, even with inadequate information, because it tells you something.

Mr. ECKHARDT. I agree with that. I think we ought to make the best calculation we can in order to weigh the risks against the benefits. The only thing I am suggesting is that that does not come to the conclusion that ultimately the burden of proof ought to be on the regulatory agency to show that the benefits outweigh the risks on a cost-benefit basis. Perhaps on a broad judgmental basis—but I think we are getting now into a realm of semantics.

I think what has been suggested here in earlier testimony is that perhaps we can never come to any conclusion except by the application of a degree of common sense.

I have been sitting hearing the question involving the question of injury by tobacco to health. I had quit smoking for 8 years, and now I permit myself one cigar a day on the basis that somehow the balance of benefits and harm is not significant. Besides that, I like cigars and it gives me a time to relax.

I do not know in my own mind yet what the risk of cigars is.

Dr. LAVE. I think that there is much to be said for a statement by the Congress that the benefits and costs have got to be reasonably commensurate and to let people scramble around. I think that you will probably find that there are some occasions under which an agency will feel hard done by in criteria of that sort.

On the other hand, I think that, in general, a rule of that sort will tend to be salutary in that it will make them pay more attention to the kinds of analysis than some sort of vague statement that says they have to consider benefits.

I am just afraid of the abuse that is possible on the have-to-consider benefits.

Dr. ASHFORD. But your question begs the whole problem. It is not an issue of commensurability. That implies a weighing between costs and benefits.

There are clear cases where, if you count up—even correctly—all the costs and all the benefits, the costs clearly outweigh the benefits. But, because certain groups of people are involved, out of the concern for fairness, you regulate that hazard.

The commensurability begs the question in a different way.

I think—and I agree with Congressman Eckhardt—that the hearing process is an adequate safeguard—and, if you really knew what the hearing process was about, I do not think you would have said the things you did today, Dr. Lave. The point is that there is a tremendous amount of exchange that goes on with regard to each element of the costs and the benefits within the hearing structure. There is endless discussion about who the winners are and who the losers are.

Congressman Scheuer, the rule is that you should define clearly what tradeoffs you are making in not too different a fashion than the Ben Franklin fashion. That is, these are the winners and these are the losers. Now, it is not a question of analytical techniques; it is a question of political responsibility. You want the heads of the agencies to take it on the chin if they do it wrong and to take the credit if they do it right. You do not want them to hide behind anything.

Mr. ECKHARDT. Certainly not the Congress.

Dr. ASHFORD. Certainly not the Congress.

You see, by having a cost-benefit formalism, you give them an easy way out. They get a facile decision rule. They do not have to consider the distribution of costs and benefits.

Mr. SCHEUER. What do you mean they don't have to consider costs and benefits? That is just what we want them to do.

Dr. ASHFORD. But I am talking about——

Mr. SCHEUER. We want them to consider all the factors that you have outlined.

Dr. ASHFORD. Let me finish. The thing that Dr. Lave is suggesting, which is routinize and streamline the methodology a la cookbook, when all these problems are very different, very different—there is no way to decide on the two goals of fairness and economic efficiency. There is no uniquely correct tradeoff rule for when you pay attention to special groups—absolutely no uniquely correct tradeoff rule.

You are not going to be able to routinize that decision. The question is political. The agencies are not investment banking firms. They are politically responsive administrative agencies. If they get a petition to ban a hazard, they cannot say: I'm sorry; it's not next on my planning list, so you will just have to wait until 1990 to get it regulated. That is not what the legal system is about.

Mr. ECKHARDT. Is there any further comment around the table?

Mr. CRANDALL. I do not think I would like to leave this hearing with the impression that somehow administrators of regulatory agencies understand the distribution of the effects that they are generating. All of the problems which have been enumerated here for doing adequate cost-benefit analysis hold in spades for doing it across groups in the economy or in the society.

I can remember one debate I had with a former staff member of a House environmental subcommittee in which he argued very persuasively—just as Dr. Ashford has—that one has to take into account not only the costs and benefits but the distribution of them. I asked him if he could think of any studies which showed that the impact of the environmental laws had had a favorable impact upon the distribution of income. In fact, I know of none; in fact, he knew of none.

I think it would be best in most cases, particularly in dealing with environmental policy, to worry about the aggregate effects and to let other mechanisms available to the Congress distribute income—not the regulatory process, which I think is particularly ill-equipped to do so.

Mr. ECKHARDT. The question of distributing income is considered but cannot be considered in the precise economic, financial, statistical way that I think we are discussing here with respect to costs and benefits. Take my example of the Clean Air Act's requirement that Armco use a bag house. To a certain extent, this distributes income.

The people who live on the north side of the Houston Ship Channel—in my district, incidentally—generally are workers. They are not the affluent. They do not own stock in Armco; some of them work there. But, if the environment in which they work is unhealthful—and there has been considerable evidence of the fact that, in the area of heavy industrial development, particularly where chemical plants are also in the mix with plants emitting a particulate matter, there is a very much higher degree of respiratory trouble in that area.

Of course, respiratory disease costs money. Doctors cost money. And these people are not the very poor that get it for nothing; they have to pay for it. Generally speaking, the great majority of them are people who are not at the medicare-medicaid age.

So, there can be a considerable effect with respect to distribution of benefits between classes and income groups. You cannot make a precise determination. But I think you ultimately make a determination without even having to be precise. That is that it is unjust to submit these people to this risk and this cost merely because they happen to be living in the neighborhood of Armco. They do not all work for Armco.

Mr. CRANDALL. I do not doubt that that is an accurate way to characterize the problem. I think, as it turns out frequently, the cost and the benefits redound much to the same groups since the disemployment effects and the effects on the local economy from taking a very strict action to protect human health is likely to redound on the same people whose health is——

Mr. ECKHARDT. There has been virtually no evidence that I know of that, when certain requirements respecting health—as the one I have described here—are employed equally to all plants that there has been a loss of jobs because of that reason.

Mr. CRANDALL. I think I would go a little bit farther, Mr. Chairman. I think I would go as far as to say that there is no evidence that any environmental law has been applied equally to all plants. As a matter of fact, there is very bad evidence on compliance and very bad evidence on compliance costs across plants.

I would think that, if in fact you did apply environmental standards equally to all plants of various age distribution and efficiency, in fact it would have a disproportionate effect upon the older plants. In fact, our environmental policy quite clearly prescribes that the standards not be even, that the old plant at Armco in Houston be treated quite differently from the prospective plant.

Mr. ECKHARDT. Well, I am talking about a relatively old plant that was required to improve its environmental situation; and it has done it. It has not gone out of business. It is still employing about the same number of persons as before compliance.

Mr. CRANDALL. Still, I think what we need in making that decision is to place some implicit value in some terms upon reduction of respiratory infection. We would like to see regulations promulgated in every arena which have similar sorts of effects up to the same level—that is, where we are paying about the same dollar cost for reducing that respiratory infection. Without some sort of measure, we cannot possibly do that efficiently.

Mr. **Eckhardt**. If we waited until we got the information necessary to determine whether or not the cost-benefit balance of building a bag house at Armco was equivalent to that of treatment for the common cold and for every other respiratory ailment if we have waited for that, we never would have made any regulation. If that had been the standard, of evidence, no regulation would ever been upheld in court.

Mr. **Crandall**. I understand that.

Mr. **Eckhardt**. I am talking about practical enforcement.

Mr. **Crandall**. I understand that, but——

Mr. **Eckhardt**. We have got to make a judgment. We frequently have to make a judgment before the final answers are in.

Dr. **Lave**. Mr. Chairman, I have done a lot of work on the effect of particulate pollution on health. I think this is probably one of the areas where, if we sat down and did a benefit-cost analysis, we would decide that, indeed, you should put a bag house there, that the social benefits would be much greater than the social costs associated with that.

I think that your example——

Mr. **Eckhardt**. I do not quite understand. That we would do what?

Dr. **Lave**. That we would put the bag house on, that the social benefits of abating the air pollution, the particulate pollution, particularly these very small particulates which are the things that get down into your lungs, are very high. And the costs of doing so, while they have a fairly large investment cost, are just not very high in terms of upkeep.

Let me also suggest that this is one of these, I think, phony areas where, if we actually sat down and did the analysis, the benefits would be so large compared to the costs that there would be no—I am not suggesting benefit-cost analysis is a way of turning back the progress we have made in the last 10 or 15 years. Rather, I think that it is a way of making faster progress because we would avoid tilting at windmills, as we have done in so many of these cases, and instead be able to concentrate our efforts in those areas that make sense.

My own analyses say that pollutants from stationary sources—that is, the particulate sulfur oxides—should be abated far more than the current EPA regulations call for them to be abated. Yet, EPA is sort of flailing around looking at all kinds of pollutants that really are not terribly important instead of concentrating their energies at those places which are good for society.

I think the regulatory budget would force EPA to start generating some priorities. The second final——

Mr. **Eckhardt**. Let me ask you one question about that.

In a hearing concerning a particular regulation, one ordinarily finds a considerably heavier expertise on the side of the industry that is to be regulated because naturally it has an intense knowledge in that area. There may be a general knowledge on the part of the Government witnesses and so forth. But industry is not without ability to present the problems involved and not without ability to propose alternate processes which may be cheaper than those provided.

Do you think that, for us to attempt in advance to try to delineate the various factors involved in a regulatory process as a general proposition so that you check it out like the report cards that Mr. Hamilton Jordan seems to be proposing and put down precisely how much weight this or that would be, that would ultimately result in a better decision than, for instance, simply taking into account the expertise that is brought in a rather free and open hearing with all the facts laid on the table?

It strikes me that, in many instances, you would do better to override the predetermined weighing of the factors after hearing those who really know the kind of plant they are dealing with, the kind of problem they are dealing with, and make an ultimate decision on that basis.

I do not for a minute here want to indicate that all of these processes are anywhere near perfect. As a matter of fact, the older processes of rulemaking frequently permit information to be brought in by the agency without it every being proposed in the hearing, from witnesses who are not identified, from mere documents that are presented. And the ultimate determination and review is based on whether or not there is any credible evidence—that is, has the agency acted arbitrarily and capriciously? If it has not, if it has just approached the boundaries of arbitrary and capricious activity, the rule may be upheld.

We have not done that with the Federal Trade Commission. In the first place, we have provided in its rulemaking that there be virtually a guaranteed right to cross-examination. The cross-examination must be of witnesses who come in and produce the evidence because the decision has to be on the basis of a record made for that purpose. In addition to that, the ultimate court review is on substantial evidence on the record as a whole.

I submit that, after presentation of facts by those who know most about the problem, and with the agency confronted with the possible overthrow of a rule which may have taken 3 or 4 years to process, you have a good deal more assurance that the determination will be that kind of commonsense determination that we have called for than if you try to predetermine a weighted balance of what constitutes a cost-benefit ratio.

Dr. Lave. I am sorry. I could not disagree more. Let me take the benzene standard——

Mr. Eckhardt. You are talking about benzene. What about something like the holder-in-due-course rule or the requirement that the octane rating be placed on gasoline pumps?

How in the world do you get a cost-benefit determination of those kinds of issues?

Dr. Lave. If you will permit, let me talk about the things I feel very confident in, and then I will try and go over.

I think the problem with the benzene standard is precisely one where an agency invests 3 years in a decision and then at that point they are going to defend that decision to the death. So, you will not get any commonsense. You will get both sides arguing a position of principle. If you are going to bring in some analytics, you should have brought them in much earlier on.

I was also going to say—and, I think, not entirely facetiously—that benefit-cost analysis will be anti-industry. If you take a look at where scientific expertise lies, where staff are, who has money to pay academics to do studies, that is so overwhelmingly in the Government sector rather than the industrial sector that it seems to me that, if you stop the agencies from flailing around and got them focused on actually generating some evidence—here let me say that this is true certainly of the EPA, which over its existence has done almost nothing until quite recently to try and generate some evidence as to what were the health effects of many compounds. It is also largely true of the occupational health area. If we focused these much more and used the budgets much more and used the budgets much more intelligently, we would know more and we would have some better rules.

I think it is the failure to come to grips with these particular rules that lead people into problems.

There is one other point I was trying to get in for a while. That is——

Mr. **Eckhardt**. Let me get back just a moment——

Dr. **Lave**. May I just make this very briefly, and then I will be able to get it off my conscience?

Mr. **Eckhardt**. You can make it any length you like.

Dr. **Lave**. The Congress is the body within the United States that ought to be worrying about redistribution of income and protecting groups.

I really get upset when I see the Congress delegating to some people who are not elected or accountable to the people some process of redistribution. If the Congress wants to delegate to people saying, "We want you to protect this particular group"——

Mr. **Eckhardt**. Well, how do we do that? Are you talking about, for instance, the Federal Trade Commission working on rules concerning funeral home practices or something like that?

Dr. **Lave**. I do not see what that has to do with redistribution of income.

Mr. **Eckhardt**. I do not either. And I do not see what you are talking about here.

Dr. **Lave**. Professor Ashford was saying that the essence of these benefit-cost decisions is, whose ox is gored. What I was saying is——

Mr. **Eckhardt**. That is a different question. Whose ox is gored is between the bereaved person and the funeral home; that is a very real question.

I do not understand how you are going to determine on a cost-benefit ratio whether or not it is desirable to permit a funeral home to insist on rolling in all of the costs of a service, whether or not they are going to play on harps around the grave, or whether they are going to have a certain length or certain model of Cadillac in the parade and put all of that on the basis of the cost of a casket.

Now, it is or it is not desirable that these costs be broken out and offered to persons individually. But I just do not see how you are going to get a cost-benefit ratio——

Mr. **Crandall**. I think that is relatively simple, actually.

I think, in fact, that what we are talking about here is the value and the cost of additional information. While we cannot specifically quantify the value of information to everyone, I think we can get certain rough rules.

For instance, if the cost of disseminating this information raises the average price of funerals substantially so that the average cost of the funeral after this goes up, even though the funeral is more——

Mr. **Eckhardt**. How do you know what it is going to be after this if you have to make the rule before?

Mr. **Crandall**. Well, I would suggest that almost any rulemaking process has to be iterative. If, in fact, a rule becomes final and is never changed, then I think we are in for a lot of trouble. If, for instance, the Environmental Protection Agency will never change its standard for primary level of ozone, I think we are in for a lot of wasted resources. They ought to go back periodically and reassess that, just as the FTC ought to reassess how much information it is going to require. Certainly the SEC does it every day.

Mr. **Eckhardt**. But Mr. Lave was suggesting that, before the rule goes into effect, it should be found that, on balance and on the question of costs and benefits, a favorable balance be found. Now, if you have got to find that before you determine that information should be given to the bereaved family in a choice of whether or not funeral homes break out their costs, and you cannot find that out until you have tested it to see whether or not funeral costs go up or down after the rule, then you have simply said that the Federal Trade Commission's hands are tied. Have you not?

Mr. **Crandall**. Not necessarily. They can——

Mr. **Eckhardt**. I do not see that there is any argument.

Mr. **Crandall**. I do not see that there is any argument either, because I think we would have to, obviously, leave to them the judgment as to whether the benefits do outweigh the costs. However, if they have a very, very large uncertainty concerning the benefits, then perhaps they ought to proceed somewhat more slowly, perhaps to apply this rule in certain areas, to try it experimentally or something, getting a quick turnaround to find out what the evidence suggests.

Nothing in what Dr. Lave or I have suggested here suggests that we do not learn by doing. In fact, it seems to me like that is the essence of regulation, where we are charting new courses and getting into new areas of human experience and regulation.

Mr. **Eckhardt**. I am glad to hear that because I think then we are not in disagreement. The Agency should properly consider the factors before it to the best of its ability to determine whether the benefits will be greater than the costs. If this is not ascertainable, it must use its own judgment on some reasonable basis and proceed with the rule or reject the rule, depending on its reasonable judgment within the statutory parameters granted under the law.

I do not think anybody disagrees on that, or do we?

Mr. **Crandall**. I think we want a provision whereby these regulatory issues were reopened. That is, we made a decision initially with very little information. Therefore, we want to be able to reassess that decision as our decision has its influence in the market or in the economy.

Mr. **Eckhardt**. Or perhaps some sort of sunset provision would be desirable with respect to such rules.

Mr. **Fischhoff**. Summarizing what we have said here, I think there is general agreement that it is good to lay out all of the costs and benefits as we know them. The question then comes: What do we want to do; how do we want to summarize those costs and benefits?

I think perhaps the economists' argument is that we should calculate that bottom line and perhaps accompany it with some sort of indication of how good our best guess is at the cost-benefit ratio. So, we might say: Well, it looks like 2 to 1 that it could be anywhere from 1 to 10 to 20 to 1 because we do not have very good information. Then, once they have done that, we probably would want to expand those confidence intervals by another factor because all of us academics tend to exaggerate how much we know and how precise our estimates are and so on.

Mr. **Eckhardt**. Let me ask you this. Would it not be reasonable to say that what you want to do in every case is, first, to the greatest extent possible determine as an economic proposition, the costs and benefits involved? Second, you want to try to determine to what extent you are really able to quantify those costs and how many of the factors involved are quantifiable at all and to what extent?

And, third, you want to determine that, even if you are able to draw some kind of balance, whether or not because of the facts or the risks which would occur but for the rules—as, for instance, the moving of a substance massively into the market that might be carcinogenic—whether you want to take that chance?

It seems to me you have got those three factors that need to be considered. That is all I am suggesting. I am certainly not trying to denigrate the attempt to do cost-benefit analysis. I am merely saying that, in the various type of regulations that we must make, there are varying degrees of usefulness in that process and there are varying degrees of desirability in permitting changes in environmental or health conditions that run very considerable risk.

You know, you have several kinds of regulations. For instance, there are the ones I was mentioning concerning funeral homes and concerning questions of the negotiable paper or labeling octane ratings and so forth. You are sort of changing the status quo. Indeed, you are somewhat changing the status quo when you call saccharin off the market. It has been there for a long time and obviously has good effects for a lot of people. But that is one thing.

On the other hand, when you permit some kind of a medicine to go on the market which you do not know much about, you are not sure whether it is safe or unsafe, or when you permit a chemical to go in large quantities into commercial operations, or when you permit an extensive use of fluorides, you have a different proposition. You are not changing the status quo; you are preserving the status quo.

To grant the rule, you vastly change the status quo, and you may change it to the considerable detriment of the environment and to the health of the people.

I am suggesting that you have different problems in those two cases.

Mr. **Fischhoff**. Could I agree with you and say that I think the real disagreement that we found on the panel boils down to the question of whether or not you should ever draw that bottom line, whether you should ever try to weigh the costs and benefits against one another explicitly as opposed to just putting them out there and trying to educate your intuitions.

It seems like there are really two kinds of arguments against drawing that bottom line.

One might be called political or ethical or even ideological issues. Doing a cost-benefit analysis promotes some things that maybe we do not want in our political process. There is some shifting of power. There is some concentration on economic issues. There are some presumptions about equity issues. And maybe we do not want to buy those things along with the cost-benefit calculus.

The second question is whether or not drawing this bottom line is going to aid our intuitions.

I would suggest, perhaps just on the basis of the psychological evidence that exists, that, once you put in any sort of number, any sort of final ratio, that ratio completely grabs people's attention. However heavily qualified it is, it is going to be very hard to budge the debate from that number. That number may be doing a disservice. All the good you have gotten out of being explicit might be taken away in terms of educating intuitions by drawing that bottom line.

Mr. **Eckhardt**. I guess you probably have put your finger on a difference between the two gentlemen to my left at the table and the two gentlemen to the right. That is the question of drawing the bottom line and whether the bottom line should approach finality. I would gather that your difference would be somewhere along those lines. Maybe I am wrong.

Dr. **Ashford**. Let me make one last attempt to raise the issue of leveraging and do it in the context of the nitrite problem.

We have been presented with a dilemma that, if we do not allow nitrite in, then we are going to have a certain amount of botulism that presents a real problem. We must recognize, though, that nitrites were put into food when nobody either knew or wanted to evaluate the consequences of their being put into food. A whole food processing industry arose where refrigeration was the way you kept food and you shipped it from California to Rhode Island.

Let's say that the congressional attempt to amend the Delaney clause is successful. What ends up happening is that risk and benefit is to be weighed with regard to food additives. What are the signals that now are sent out to the food processing industry?

Before that would have happened, when Delaney was still as is and still in effect, all methods other than adding new food additives would be derived and invented to produce safe food; that is, local production, extending shelf life by different mechanisms, and packaging it in a different way.

Once you allow industry to say, "Ah, they're going to balance costs and benefits anyway," industry will put us in the nitrite position again. They will say, "Look, the way we produce our food, there is no other way but to use substance X to preserve this and substance Y to preserve that."

That is what I am talking about in terms of the real issue here: make sure that, with the few areas that we regulate—12 substances a year maximum—what we tell industry is this. Find a technological way. You've got the time. You've got the ingenuity. You've got the maximizing capability. Find a way to do it where the externalities are not spilled on the environment, the consumer, the worker, and the ordinary citizen.

Once you inject a cost-benefit solution, the technology will force you to weigh it like we are now forced to do it in the nitrite case. The question is, do we want more nitrite dilemmas, or do we want to eliminate that kind of problem?

Mr. SCHEUER. May I interrupt on a matter of personal privilege?

Mr. ECKHARDT. Certainly.

Mr. SCHEUER. The gentleman attributed to me a particular position on nitrites. There is nothing in the record that indicates to you my position on nitrites. I want to make it perfectly clear I do not have the position on nitrites that you just imposed upon me.

Dr. ASHFORD. I did not think I imposed a position on you.

Dr. LAVE. Could I clarify something for the record? I have been doing a study for Charlie Schultze on food additives and contaminants, a major part of which is sodium nitrite.

Yes, I was the one who raised that issue. No, Dr. Ashford is not correct. Sodium nitrites have been used for curing meats for thousands of years literally. It is not a capricious industry in the last 20 years that developed all these just so it could make more money.

No, I do not think the industry is acting as a single force to try and dissuade consumers.

If you were to ban sodium nitrite now, the consequences on the taste of bacon and ham and corned beef would be such that saccharin would have seemed like a small tempest in a teapot.

Let me say, though, in response to your statement, Mr. Eckhardt, that the major issue that we have been skirting around and have not gotten at is this: Do you do analysis or don't you do analysis?

The sad fact is right now, in spite of what Dr. Ashford said, most of those agencies are not doing some analysis. They are going and developing a record, but the record they are developing is what people want to come in and say off the top of their head without collecting any data or really trying to get at this stuff.

The fundamental point is, you do analysis. I hope the answer is we all agree that, yes, you do analysis. You force people to collect some data. You force people to try and estimate what are the risks, what are the effects.

There is a secondary question. It is of relatively minor import compared to the first question. It is, do you then go on and monetize these effects? Do you try and draw a bottom line?

That really is very small. If you are going to reform the regulatory process in the United States right now, what you have to do is to get them to take that first step——

Mr. ECKHARDT. Do you all agree that you do not draw bottom line and let the decision be on the basis of a bottom line based on cost and benefit balance? Do you agree on that or do not you agree on that?

**Dr. Lave.** I am sorry; you said two things.

**Mr. Eckhardt.** Divide them into two and tell me what you think on both of them.

**Dr. Lave.** I think that you ought to draw a bottom line just because you ought to press these things as far as you can and then back off and look at them.

I do not think that you ought to make your decision strictly on the basis of that, but I think Mr. Crandell may disagree.

**Mr. Eckhardt.** Well, that is a definition of bottom line which I think we may all agree with. You attempt to draw a bottom line. You come to as close a judgment as possible with respect to costs and benefits.

I am not sure that I would even get agreement with Dr. Ashford on that because he seemed to think that that tends to prejudice the case too much against the regulation.

It would seem to me reasonable that you at least attempt to draw a line based on costs and benefits. But it is my feeling that the weight to be given to that bottom line on balance would vary quite sharply in different situations.

For instance, take your question of a substance that is known to be a carcinogen. At least it has been tested on animals and shown to be a carcinogen. It would seem to me to be a rather reasonable thing to say: Well, prima facie that substance should not go on the market. At the point that this is shown there ought to be the going forward with evidence on the part of those who want to put it on the market that its carcinogen effect has not been definitely proved with respect to humans or that it is so slight that and its benefits so great that it ought to be permitted to go on the market.

But it seems to me perfectly correct to say, in the first place, that the burden should lie on a person putting a known carcinogen on the market and these benefits quite clearly outweigh the possible danger.

**Mr. Scheuer.** Is this not an area where, in the decisionmaking process, we would distinguish between a carcinogen that is there but people voluntarily opt for it, as in the area of the consumer purchase of meat that has been preserved. There we must make sure that people are given all the information. In contrast, is the substance which is in the workplace or in the environment in an area where consumer choice has been removed and it is beyond the control of an individual to accept after weighing risks involved?

Might not there be a tougher standard for carcinogens that are spewed into the air or into the water without any individual choice for the consumer as opposed to one who wants to buy some meat that has been preserved with nitrites where it is on the label and there is a competitive product which is a natural product?

There is a whole consumer movement which believes that. Not only should there be no chemical preservatives, but there should not be any chemical fertilizers—the whole area of organic foods. There is a real consumer group out there that will not buy food that has been produced in which there are preservatives and so on.

I will not eat peanut butter that is made with cocoanut oil, which is what they normally use to prevent the peanut butter from separating. I choose an alternative.

I would like to ask the panel, How do we distinguish between a substance that is imposed upon us and a substance which we can voluntarily opt for or reject in favor of competitive products that do not have carcinogens in them?

How should the system of decisionmaking distinguish between those two products?

Dr. **Ashford.** Certainly involuntary risks ought to be looked at much more carefully than what you label to be voluntary risks.

I think there is a good case to be made for allowing more freedom of choice with a voluntary risk. Maybe that is the one point that everybody in this room can agree on. But let me spoil the soup.

You have to be careful by what you mean by "voluntary." For example, the issue of nitrites is a case where the facts are clear. The benefits to be derived are at least clear in kind if not in magnitude.

It is not, however, clear in the case of saccharin. It is not clear that diet foods contribute in any way either to weight maintenance or weight loss.

Mr. Crandall, if you are looking for evidence, not a single study after all the hullabaloo with saccharin has come forward—not a single study demonstrates its effectiveness as either a weight control or a weight loss factor. So, the allegation that there is a benefit just does not hold.

People happen to be mislead about the fact that saccharin contributes to weight loss because there is absolutely no evidence. It is a belief. There is a tremendous amount of money that goes to persuade people to voluntarily assume the risks of saccharin. So, in that voluntary area I have problems.

Mr. **Eckhardt.** Gentlemen, I do not know whether we have come to any consensus; I rather doubt that we have. But we have probably aimed our questions and our comments at a number of the same questions. I think we have sort of defined differences which may exist in different areas of rulemaking.

One thing that has always troubled me is that there seems to be a kind of a tendency these days to try to make Cinderella's glass slipper and then cut all the feet to fit that slipper. That may be true with respect to our rulemaking process bills, and perhaps it may be true with respect to what ought to be done about standards of rulemaking.

It seems to me that there are many different problems we have. I think we have identified them here. We have identified some of the differences and perhaps some of the common issues involved.

I think that your presentations here have been most useful to this committee. I have seldom seen as spirited a panel willing to disagree but with reasonableness. We thank you for being here and helping us.

Mr. **Scheuer.** Mr. Chairman, I want to thank every single one of the witnesses for helping us illuminate this whole area. We did not agree with everything that everybody said. In the case of Dr. Ashford, with whom I may agree and I may disagree—I am not quite sure—you have been extremely helpful in identifying areas that we ought to think about in fine tuning our thinking. I feel that you have changed my thinking this morning——

Dr. **Ashford**. Thank you.

Mr. **Scheuer**. Particularly in terms of sending out signals and particularly in terms of factoring in equations. I think we have got to preserve that. You have helped me fine tune my thinking. I want to express my thanks to you, Dr. Ashford, as well as your three colleagues there.

I feel particularly the format that we have developed of sort of a free-flowing interchange has been extremely useful and extremely productive. I have benefited by it greatly. I want to express my gratitude to you all.

Mr. **Eckhardt**. The two subcommittees will be adjourned, subject to the call of the Chair.

[Whereupon, at 1:25 p.m., the hearing was adjourned, subject to call of the Chair.]

# USE OF COST-BENEFIT ANALYSIS BY REGULATORY AGENCIES

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WEDNESDAY, OCTOBER 10, 1979

House of Representatives, Subcommittee on Oversight and Investigations, and Subcommittee on Consumer Protection and Finance, Committee on Interstate and Foreign Commerce,

*Washington, D.C.*

The joint subcommittees met, pursuant to notice, at 10 a.m., in room 2322, Rayburn House Office Building, Hon. James H. Scheuer, chairman of the Subcommittee on Consumer Protection and Finance, presiding (Hon. Bob Eckhardt, chairman, Oversight and Investigations Subcommittee).

Mr. Scheuer. The subcommittees will come to order.

We are having the second in a series of hearings on the whole question of costs and benefits of Government regulation. This is a question that is at the top of everybody's mind. For a generation we have been going further and further into the whole question of Government regulation. We now see at this time of proposition 13 an apparent massive explosion of resentment against the ills, the perceived ills, of Government regulation. Some of the ills are real, many of them, unreal.

We have seen a massive attack on the jurisdiction of the Federal Trade Commission mounted by industry in a number of different ways. If the attack is successful it will surely be followed by subsequent attacks on other regulatory agencies concerned with health, with safety, with the environment. So it very well behooves Congress to take a good, hard look at the Federal regulatory process, to make sure that we are continuing to support regulatory agencies which are doing the people's work in a thoughtful, cost-effective, and compassionate manner.

Now, this is a very difficult task to accomplish. We hear from the representatives of the consumer groups, the environment groups, the health and safety groups, about the benefits of regulation, and you can make an excellent case for benefits. But the problem is that these groups do not generally focus in very much on costs. We hear a constant litany of complaints from business groups about the cost of Federal regulation. To them, any cost is frequently too much of a cost, without any balancing consideration of benefits achieved.

What this whole new science—or high art form—whatever you want to call it, of cost-benefits analysis is trying to do is to provide some kind of discipline, whereby the environment, health and safety groups, and the business groups can sort of get together in a common calculus so that we can achieve reasonably attainable advances in health, safety, and environment, without trying to achieve the ultimate at a cost which is unbearable and insupportable by our economy, without egregious and really quite unjustifiable costs.

We are trying to achieve further protections of people in terms of health, safety, and environment, at costs that are reasonable, in consideration of benefits achieved. This is by no means an easy process. It is fairly easy to quantify costs. It is very much more difficult to quantify benefits. We are going to hear from several distinguished witnesses this morning on their perception of how you quantify benefits, and perhaps some analysis of costs doing too.

This is a joint meeting of the Subcommittees on Consumer Protection and Finance and the Oversight and Investigations. Our subcommittee has jurisdiction over five regulatory agencies, and more than double that number of regulatory programs. Chairman Eckhardt's Subcommittee on Oversight and Investigations has oversight jurisdiction over our five agencies plus the Food and Drug Administration, and over the entire jurisdiction of the Environmental Protection Administration, of which we have a slice. So between our two subcommittees we have jurisdiction over by far the most important segment of the governmental regulatory process, and Congressman Eckhardt has been in on this from the beginning. He could not be with us this morning.

First I would like to yield very briefly to Congressman Norman Lent of New York.

Mr. LENT. Mr. Chairman, I am pleased with your leadership in this field as well, and I am pleased that we have these three witnesses able to join us this morning to discuss their analysis of the benefits of Federal health and safety enforcement.

Mr. SCHEUER. I think they are doing an analysis of the whole costs and benefits spectrum. I do not think they are restricting themselves to benefits. We will soon find out.

Mr. LENT. It appears from the report that these witnesses are well prepared to argue the problems they believe exist with respect to cost-benefit analysis.

Mr. SCHEUER. Right.

Mr. LENT. Particularly what they believe to be the difficulty in quantifying benefits, and although I do have some questions for you today about your report, as a layman who received the report only yesterday, I am not in a position at this time to raise the kinds of issues which I believe a thorough analysis of the report would yield. Hopefully, we will have that kind of a debate here later this month, when experts whose philosophy differs markedly from yours have had an opportunity to thoroughly analyze the report.

I believe that one of the greatest challenges that we face today is to determine as a Nation how to most effectively allocate our limited resources. Unfortunately, we lack both the money and the manpower to fulfill every goal we would set for ourselves. Thus I believe that we need a system to help us decide where our resources are best spent.

As a Congressman, I am called on every day to decide how to spend limited tax dollars. Do we seek greater improvements in highway safety or do we assist in research to develop more effective pollution control devices? Just yesterday the Washington Post reported that EPA estimates Federal programs to control environmental pollution are expected to cost the public and private sectors more than $360 billion between 1977 and 1986.

That figure could be dramatically increased, if Congress passes proposed legislation to set up a huge fund to pay for the cleanup of hazardous wastes. Naturally, we would like to have the resources to pay for these pollution control programs, and many others, that will save human lives. Unfortunately, this country does not have unlimited resources, so somewhere along the line we must start utilizing a system of valuation to maximize the benefits we can obtain from our limited resources.

I believe a cost-benefit system can greatly assist us in making these types of inherently difficult decisions. I recognize that it is an imperfect science, and that benefits particularly when you are dealing with human life are difficult to compute, but I also wonder if we had used such a system when adopting health and safety regulations in the past, whether greater benefits could not have been produced.

I thank the witnesses for their participation and the chairman for giving me this opportunity.

Mr. **Scheuer**. Thank you, Congressman.

Are there any other statements down the line?

Mr. **Rinaldo**. I will be as brief as possible. There are some things I would like to say for the benefit of the witnesses and others in the room. First of all, I do not think there is anybody that would disagree that in the cost-benefit equation costs are easier to quantify. Benefit does not lend itself to measurement, particularly in the health and safety area.

I do not think we can abandon this type of search, and I certainly want to compliment the subcommittee for addressing this problem. I want to thank Mr. Nader, Mr. Green, Mr. Waitzman, and the Corporate Accountability Research Project group for their contribution to our efforts.

We received the report—on Friday. [See p. 141.] Our staff did have an opportunity over the weekend to go over it in great detail. I went over it as well as I could in the limited amount of time I had, and I would like to comment on it.

The analysis of the benefits of the Federal health and safety enforcement is cogently argued. It is well documented, and it is tightly written. But on the other hand, it really boils down to a model, in persuasive advocacy. It would make a good brief. It plays upon our emotions and appeals to reason at the same time without being utopian or visionary.

My only disappointment is that I hoped there would have been more field work and less library work. There appears to be a bewildering array of studies, and I was hoping for a breakthrough in benefit analysis rather than what I would characterize as a fiery indictment of the present mandate for cost justification. Certainly the study is a positive contribution to our cost-benefit hearings, but I think it presents and tries to take one side of the question rather than the broader look which could have been achieved with more field work and perhaps some empirical studies.

Thank you, Mr. Chairman.

Mr. SCHEUER. Thank you, Congressman Rinaldo.

We will now get to the business of the day. We are delighted to have this extraordinarily talented group of individuals before us. Frequently when we get chastised by somebody in strong terms for our manifold imperfections, we tend to become a little bit defensive. We say among ourselves: "Who the hell does that guy think he is, Ralph Nader?"

Well, we are very happy to have the arch critic of government, of business, of Congress, and the State legislatures, a critic of all of us for not doing our jobs better. We all understand that we are imperfect creatures in an imperfect governmental environment trying to do the job better. We are very happy to have the arch goad of them all, a man who really and truly does think he is that character, Ralph Nader.

Glad to have you, Ralph, Mark Green, Mr. Waitzman. Why don't you take off and organize your scenario as you wish, Ralph.

## TESTIMONY OF RALPH NADER, CENTER FOR RESPONSIVE LAW, ACCOMPANIED BY MARK GREEN, CONGRESS WATCH, AND NORMAN WAITZMAN, CORPORATE ACCOUNTABILITY RESEARCH PROJECT

Mr. NADER. Thank you, Mr. Chairman. With me are the two authors of the report which we released yesterday, Mark Green, who is director of Congress Watch, and Norman Waitzman, who is a graduate student in economics at Berkeley University.

The preliminary remarks I will make with some observations and the two others will be very pleased to respond in detail to any of the questions that the members of the subcommittee or the chairman wishes to direct.

Mr. SCHEUER. Let me say that any statements you have will be printed in the record, or we will be happy to have you continue orally in any way you wish.

Mr. NADER. Thank you. It is important to put the debate on cost benefit and Federal regulation in a broader context, and ask the question, Why has the debate focused so heavily on regulation when it has not focused at all on the cost benefit of corporate subsidies by the taxpayer, on the cost benefit of the military budget, on the cost benefit of the space budget, or even conceptually on the cost benefit of corporate advertising?

Corporate advertising would be very hard put to show the cost benefit, the benefit part of their advertising. I submit that although in total dollars, borne by the taxpayer, these other areas are far, far larger, that the reason why there is a focus on the cost-benefit matter in Federal regulation is because it is now seen as an attack by corporations to try to defeat what has been built up over the years as a serious concern by Congress and the executive branch over the management of violence in our society, that is attributed to pollution, health, and safety hazards that accrue from dangerously designed or inadequately tested products, from automobiles to drugs.

I think we should keep this context in mind, because much of this dialog is a reflection of a power play by corporations, and Congress should be a little more equitable in its distribution of concern about cost benefit, and in other committees focus on the cost-benefit questions of taxpayer subsidies to business in many of these other areas that have been so neglected.

When the Russian biologist Lysenko created the myth in the 1940's that acquired traits could be inherited, the Soviet regime adopted his theory as State doctrine since it reinforced Government policy about the "new Soviet man." So too does the myth of the "excessive cost of government regulation" serve the needs of corporate doctrine—though it is about as reliable and scientific as Lysenko's theory of genetics.

We see the evidence of this campaign against health/safety law enforcement in the United States all around us—from company annual reports, to studies of the costs of regulation, and newspaper advertisements that blame Federal regulation for inflation, unemployment, and the decline of the dollar, productivity, and Chrysler. They have not yet got to original sin.

A representative sample of such corporate advertising is included in appendix A of this report as well as Herblock's inciteful reply to them. [See p. 312.]

There are several problems with this catechism of business. It rarely pauses to distinguish between unnecessary and wasteful cartel regulation—say the prohibition on backhauls by the Interstate Commerce Commission—and life-saving health/safety regulation—100,000 Americans are alive today because of Federal highway and safety enforcement since 1966.

Assuming national amnesia, it fails to acknowledge why there is regulation in the first place: vis, humane capitalism should not tolerate the conditions described in Upton Sinclair's "The Jungle" 1906—the thalidomide disaster, 30,000 product-related deaths annually, 50,000 car fatalities a year, or 100,000 annual deaths from occupational disease alone.

It also seems based on theology before analysis, or as the Queen said to Alice, sentence first, verdict later. One need not be a psychologist to realize that the traditional business ideology of economic Darwinism and the powerful self-interest to exaggerate the burdens of regulation lead predictably to the "Chicken Little School of Regulatory Analysis." Examples of this impulse range from business leader Richard Whitney's prediction in the early 1930's that Federal securities laws would destroy the securities markets to the more recent claim, later discredited, that there would be no spray cans without flurocarbons. To accept business' claims about the costs of regulation at face value is about as credible as asking a DA if he thinks a defendant is guilty.

This is where I think Congress needs to do some work. Instead of accept these cost figures which the historical record has proven again and again to be wildly exaggerated by industry, they should more readily use their subpena power and put their staff to work to analyze the basis of these cost figures, going right back to the suppliers' invoices.

Mr. SCHEUER. Excuse me, Ralph. Has that been done by your group or any other group in connection with particular industries, or even regarding the allegation of particular firms as to costs that they have undergone to comply with various health, safety and environment regulations?

Mr. Nader. Since we do not have subpoena power, we cannot get at the raw data, but on a number of occasions such as a hearing in the late 1960's in the Senate, the Senate did get to the bottom of some of the claims, such as the alleged $25 to $30 cost of shoulder harnesses, and they showed that the suppliers were supplying the shoulder harnesses to the auto companies for less than $5. So that is why I emphasize really only Congress or an agency with subpena power can do this.

Now the Traffic Safety Administration has the power. Whenever the companies allege that they cannot comply with the safety standard because of excessive costs, they have the power to obtain the raw document.

Mr. Scheuer. I suspect that the full story has not been told on the cost of supplying seat belts, the airbags. What the costs would be if some kind of a passive restraint system were mandated, and especially what the costs would be of the reinstallation——

Mr. Nader. This is a perfect example. The estimated cost of airbags has ranged in the last 2 years by the auto companies from $200 to $800. I suppose it will be $1,500 shortly.

Mr. Scheuer. The reinstallation?

Mr. Nader. No, no, for the original.

Mr. Scheuer. Yes. There are spectacular variations on the cost of the reinstallation.

Mr. Nader. That is right.

Mr. Scheuer. I am impressed by the fact that when the automobile manufacturers complain loudly about the cost of reinstalling an airbag, they ignore the fact that presumably there is the concomitant fact that it has either saved a life or has averted a serious injury.

Mr. Nader. That is right.

Mr. Scheuer. They talk just about the $500 in costs for the second use. There is never mention of the fact that by that time it has already justified 100 times over the original cost of installation.

Mr. Nader. That is right.

Mr. Scheuer. Because, statistically speaking, we know only one car in hundreds or thousands is the airbag ever going to be used. But here is the payoff for the original use not only for the original installation in that car but hundreds of other cars.

Mr. Nader. And I might add, covered by $1 surcharge on your auto insurance.

Mr. Scheuer. Exactly, and here the main complaint is that after the spectactular success of this thing, in saving a life or a serious injury that would require hospitalization, the complaint is on the $500 or $600, or whatever hundred dollar charge it is for the second use.

Mr. Nader. I think, Mr. Chairman, it shows how pervasive merchantile values as defined by corporations have transcended far more fundamental values such as the sanctity of human life in our society. I wanted to add the former vice president of General Motors, John DeLaurient, produced cost figures for airbags about 2, 3 years ago, and he estimated on mass production a front-seat cost of about $50 or $55. So you can compare that with the wild exaggerations of the cost estimates by the auto companies used for strategic purposes.

Mr. **Green**. Mr. Chairman, you asked about examples. Beginning on page 24 of the report, there are a series of examples where we think subsequent information demonstrated that companies exaggerated the cost of regulation as a way to defeat them. For example, the vinyl chloride industry protested if they were regulated in the mid-1970's it would cost the industry $60 to $90 billion and millions of jobs. Vinyl chloride is a known carcinogen. They were regulated. Final cost was one two-hundredth their original estimate.

Beryllium is a metal used in the production of nuclear weaponry. OSHA regulated them. The beryllium manufacturers complained to then Secretary of Energy Schlesinger that it would cost about $150 million in compliance costs. They were regulated. The final cost, $3.7 million to $4.6 million, about one-thirtieth the original estimate.

We think that pattern is probably prevalent.

Mr. **Scheuer**. Can you give us the underlying documentation of these two examples?

Mr. **Green**. I will be glad to provide it to the subcommittee subsequently.

[The information requested was not available to the subcommittee at the time of printing.]

Mr. **Nader**. Finally, in concept and language, the corporate catechism seems to assume that there are only costs of regulation, not benefits. Here, the business rhetoric of the 1970's is about as sophisticated as the business rhetoric of the 1950's, when the tailsman of the day was not "the costs of regulation" but "creeping socialism."

The conceptual and empirical weaknesses of the business war on regulatory law have kept it from making substantial advances in public opinion. An analysis of poll data in Regulation magazine by Seymour Martin Lipset indicated continuing strong public support for specific health/safety regulation. Everett Ladd, Jr., a year ago in Fortune concluded that Americans over the past decade or two "have become more demanding of Governmental services * * * the heart of the indictment is a call not for less government but for better government."

In 1968, reports George Gallup, 49 percent of the public thought big government was the greatest threat to the Nation and 12 percent thought big business. In May of 1979 the numbers were 43 and 28 percent, which does not indicate a trend that demands the abolition of OSHA or the FDA.

Despite its substantive failings and public unpopularity, however, the corporate case against regulatory costs is making headway in Washington, if not in the public opinion polls. Ideas are being seriously considered that are as constitutionally and/or administratively defective as the legislative veto, sunset, formal cost-benefit analyses, Presidential intervention, and the "Bumpers amendment" to end the judicial presumption in favor of agency decisionmakers. And the Carter administration puts pressure on consumer and environmental law enforcers to do less, never more.

According to the Wall Street Journal, which follows these matters diligently, "Mr. Carter has turned the screws on social regulators more effectively than did either of his Republican predecessors." Those Republican predecessors, if we have ever forgotten, are Gerald Ford and Richard Nixon.

This report is based on the assumption that slogans eventually collide with reality and that antiregulation slogans are beginning to wear thin in a year that has witnessed Three Mile Island, PBB in Michigan, Love Canal in New York, the DC-10, and the scaffold collapse at Willow Island in West Virginia. On the subject of Federal health/safety regulation, it is time for a backlash to the backlash. Specifically, this report's major sections attempt to demonstrate that cartel regulation and health/safety regulation are as different as airplanes and airbags, that the costs of regulation are biased upward by business advocates and their retained economists, that cost-benefit analysis is a primitive tool that inherently discriminates against beneficial regulation, and that the best studies of the benefits of five major Federal health/safety programs—Occupational Safety and Health Administration, the Food and Drug Administration, National Highway Traffic Safety Administration, Environmental Protection Agency, Consumer Products Safety Commission—indicate that the lifesaving and economic benefits are over $35 billion in 1978, will be $80 billion by 1985, with a potential annual benefit of over $200 billion. A chart on page 131a has a breakdown of these figures agency by agency.

It is our goal to balance the debate over regulation by reconceptualizing it and by developing new data. This debate is now conceptualized as one over big government, when the real issue is corporate crime and public health, for the management of corporate violence to acceptable levels, either zero or tolerating them to the best risk level that the country is willing to accept, when informed. For if the willful corruption of a town's river and air, the willful pollution of a town's river and air, if the marketing of a dangerous tire or car, if the toleration of a hazardous worksite that can lead to death or injury is not criminal, then the word has lost its meaning—hence the title "Business War on the Law"—for regulations that seek to protect consumers and workers are not redtape, the latest codeword, but law, not redtape but law.

We are reaching a dangerous situation in this country where due process is called redtape, where law and order applying to corporate crime is called redtape, and it is time to clarify the language, so that we can clarify our thoughts, so that we can direct our most humane values to these problems at hand.

Also, as participants in this debate talk less about abstractions and more about the victims of market abuse, the perception of what is at stake in the issue of regulatory reform becomes more compelling. Consider Neil Goldschmidt, the incoming Transportation Secretary, who told a television interviewer that he would not casually cut back on auto safety regulation because "it is very hard to tell somebody who has turned into a paraplegic or epileptic because of an automobile accident * * * that there isn't any reason for the Government to pay attention to safety standards."

New data are essential since existing data—developed by drug firms not drug consumers, by trade associations not labor unions, by industry economists and not consumer activists—have proven so one sided and distorted. As our analysis indicates, for example, Murray Weidnbaum's estimate that all Federal regulation costs over $100 billion is a consumer fraud—ideological arithmetic that should be interred with the claim that the chances of getting injured in a nuclear accident are about the same as being hit by a extraterrestrial meteor.

A compilation of benefits data, however, was not without risk. Many of the existing studies were crude; this field is in its infancy. Also, some colleagues warned us against quantifying benefits at all, because it would require the valuation of life and because benefit studies invariably understate, due to their inability to measure esthetic gains, psychological suffering, or equity and distributional gains. But we thought it important to utilize and encourage an analysis of benefits—especially as Congress begins to consider and mark up various regulatory reform measures.

So while this report is, to our knowledge, the first attempt to both quantify and synthetize the benefits of health/safety regulation, it surely won't be the last. We welcome subsequent scholars and officials to critique our efforts—and then to build on it and go beyond it. But I think it is important for us to recognize and point to the section of the report which shows the severe limitations of any cost-benefit analysis, when you are dealing with human life. The real question should be asked as follows: Does the engineering system designed to safe health and preserve safety work, and can it be put into practical effect in our economy?

There is never in my judgment, any time when the consequential benefits of workable safety engineering, never at any time that it cannot be justified if not in spiritual and human terms, in economic terms.

Mr. SCHEUER. Let's take a bizarre far out case in my opinion, the question of helmets for motorcycle riders. I do not suppose you could find a more cost-beneficial investment, with the possible exception of seat belts, in the entire range of Government regulation. Yet we have seen State after State that had requirements for helmets for motorcycle riders rescind them, pull back, flying in the face of every conceivable standard of logic and intelligence. How do you explain this interplay of political, social, psychological, macho forces? I do not understand what is happening out there.

Mr. NADER. Certainly no country in the Western Hemisphere permits motorcyclists to travel without helmets.

Mr. SCHEUER. Nor Japan?

Mr. NADER. Nor Japan. There is a less than majority organized core of motorcyclists who are very vigorous lobbyists, and who ring the State legislature with their motorcycles churning at the time of the deliberation of the repeal legislation, and legislators figure that they are not going to gain any votes by keeping the motorcycle helmet law, but they may lose a few, as is characterized by one-issue politics in our country.

The tragedy, of course, is that the motorcyclists who loses consciousness because there is no helmet to protect him or her in a crash increases the risk of death and injury to other people on the highway, increases the taxpayer's burden to pick up the motorcyclists and take them to a hospital, and increases the auto insurance burden.

It is our judgment that when you are on the public highway, your operation and behavior is inextricably linked with that of others on the highway and there have to be uniform rules covering the equipment used on that highway. There is a perfect and systematic correlation between the reduction of motorcycle helmet use and the rise of fatalities and injuries on the part of motorcycle riders and drivers. I do want to emphasize that sometimes it is good to have Members of Congress ask themselves the following question: If two astronauts on their way to the Moon went out of orbit, and it required $2 billion to save them, would there be anybody in the U.S. Congress who would say that is not cost beneficial? That raises an overall question about the importance not only of the value of life and safety and health, but also what are these costs.

Mr. **Scheuer.** I imagine that we spend more than $2 billion in a whole series of fail-safe devices, that did not do anything to enhance the success of the mission, did not do anything to increase the information that we got from spaceflight, but was simply spent, that investment made, purely as fail-safe devices, to save the lives of the astronauts. So not only is your hypothetical absolutely on target, but I think if you would look at the investment we made in space, an enormous amount of it would have been spent simply to protect the safety of the astronauts in every conceivable predictable circumstance.

Mr. **Nader.** For some psychological reason, our society has been willing to spend more money to save lives in proportion to the distance that these lives are from the planet Earth; that is, the most expendable people historically were miners. The second most expendable people were people killed on the highway. The third most expendable, the third layer of people, in airplanes, and then astronauts. I think we ought to ask ourselves and get down to basics, about what an economy should spend its money on.

An economy that spends $55 billion on gambling, that spends $50 to $60 billion on cigarettes, cosmetics, and alcohol, a society that is willing to spend $140 billion on a defense budget that it cannot show with congressional demand at clarity a cost benefit for, a society that is willing to spend over $100 billion for taxpayer subsidies to big business, and other special economic interest groups, spends most of its time quibbling about a few billion dollars that can save the lives of hundreds of thousands of Americans, and prevent injury and disease.

I submit that is not intellectual clarity. That is responding to crude corporate lobbying pressure on Capitol Hill, and I think that if more Members of Congress went out to the highway and saw the death and destruction firsthand, the way the police see it, and if more corporate executives would go down into the mines, like the directors of the Armco Steel did, when the president of Armco Steel brought them down into one of the coal mines and one of them came up and later told me that after 30 minutes with the miners underground, he will never again say that coal miners are overpaid.

These people that are lobbying you are elitists, remote. They live in air-conditioned buildings. They are never next to the blood and carnage and disease that afflict America, and that Congress years ago decided to do something about.

Mr. **Scheuer**. You just described most Members of Congress and most members of State legislatures. Unfortunately, with all the best of intentions and the best of will in the world, we are too far from it. We ought to have our noses pushed into the grime and the sweat and the blood and the tears—and that includes me. I am just as guilty as the rest of them. We are too remote.

Mr. **Marks**. Mr. Chairman, may I say that some of us in Pennsylvania have been down in coal mines.

Mr. **Nader**. You have been. Senator Hollings saw the poor people hungry in Buford County, S.C., and he came back and turned around 180 degrees and became an advocate for feeding hungry Americans. It works. I mean unless the person is an absolute brute, when you see this kind of empirical reality, it has got to quicken some of the finer instincts of a human being, and there just are not enough of these exposures.

We have been trying for years to get the House of Representatives through Congressman Gaydos and the Senate through Senator Williams to hold occupational health and safety victim hearings, the way they were held in the late 1960's, to bring the victims from the mines and from the foundries and from the chemical plants, and have them speak, instead of the slick, $250 suited, chamber of commerce representatives. I say this by way of saying that although we have presented a cost-benefit analysis, that there are much more fundamental things at stake here, and that a society should spend a lot of money on the most fundamental values of a country such as ours, health and safety, because when a company spends money on health and safety——

Mr. **Scheuer**. Isn't environment in that category?

Mr. **Nader**. Here is the point. When industry is required to spend money on health and safety, that isn't like spending money on napalm abroad. That puts people to work. It puts distributors to work. It puts business to work, and it saves lives. So even the cost has to be analyzed.

Mr. **Scheuer**. Isn't that also true of investments and protecting the environment?

Mr. **Nader**. Exactly. If we poison our water, even industry is not going to be able to use it. If we poison our land, what are future generations going to inherit?

Mr. **Scheuer**. And even the industrial elite that you referred to breathes the air, uses the land and the water, and their wives and kids do, too. I never understood why this elite group in our society wasn't more concerned about this. I can understand why they are not personally involved in any emotional way with mine safety regulations. Most of them are not working in the mines, the elite decisionmakers, but most of them and their wives and kids drink the water that flows on our planet, and do enjoy the environment.

Their kids are inheriting the patrimony of mankind: our glorious natural resources. I never understood why they did not identify with clean water and pure air. They consume every day as consumers. They are consumers of those just as we are, just as the miners are. They are not consumers of mine safety equipment or beneficiaries of mine safety. They may very well be of automobile safety. Their kids are just as negligent as my kids in an automobile in not buckling in their seatbelt. They would benefit as much from airbags as my kids would.

I do not know why they do not identify with the environment, safety, and health matters that affect them, even as elitist members of society.

Mr. **Nader**. Three reasons, Mr. Chairman, at least. One is they adhere to the precept that many people adhere to, if it does not pinch it does not hurt, but we know that radiation does not pinch but it can hurt, and so can carbon monoxide, even though you cannot smell it, taste it, or touch it.

The second reason is that apart from going through cities and other polluted areas, the wealthy and powerful in this country do live in the least polluted zones. They do live in the shrubbed suburbs, not next to the polluting plants.

Third, the corporate executives have other priorities. Their most immediate ambition is not in the direction of being known in American history as preventing industrial-source disease; it is in increasing sales and increasing their own escalation up the corporate ladder.

Notice, if you will, in your home State, because of the reluctance to spend a few dollars at West Valley, N.Y., by Getty Oil, now the taxpayers are going to spend $1 billion to clean up that, because Getty Oil abandoned the fuel reprocessing site and gave it to New York State and kepone, rather than Allied Chemical and its subsidiary, Life Sciences, Inc., if they had spent a few thousands of dollars preventing the spill of this deadly pesticide we would not be told by scientists and engineers that if we can clean it up, in the James River and Chesapeake Bay—if—it will cost billions of dollars. That is what I mean by an ounce of prevention is worth a pound of cure in this area.

Mr. **Scheuer**. You can give the Love Canal example from my State.

Mr. **Nader**. Yes.

Mr. **Scheuer**. I tell you one thing, I think the level of perception of benefits is increasing. Now in our State, we are very close to having the Hudson River swimmable at New York City. We are within 2 or 3 or 4 years, because that tertiary sewer system is working. In my congressional district in New York City in Queens and Brooklyn, which includes the entire Jamaica Bay area, elderly citizens of that community, most of them in that Irish enclave in Broad Channel, say to me, "Congressman, I am crabbing. I am catching oysters and clams." I wish I could get the Irish accent into the record. "The last time I caught oysters and clams I was with my daddy in 1905." Literally, they are talking about 75 years ago and their eyes are glistening with excitement.

In another couple of years the entire Jamaica Bay is going to be swimmable. In another 3 to 5 years the Potomac River in Washington, not 2,000 yards from where we are sitting now, could be swimmable, and I suggest that when that happens, there is going to be such delight and such excitement at what this investment of a couple of hundred million dollars have done in producing clean water and rivers and streams and lakes that are no longer eutrophic will be seen as wise.

Mr. **Nader**. As well as producing a lot of jobs.

Mr. **Scheuer.** As well as producing a lot of jobs. As well as making water recreation available within minutes to millions of our entire urban population. I suspect that as we begin to see some of the payoffs from these long-term investments, there is going to be a lot more public support for many of these investments.

Mr. **Nader.** That completes my preliminary statement. Mr. Green and Mr. Waitzman will be pleased to answer any more detailed questions on the report.

Mr. **Scheuer.** Did either of you have anything you would like to add?

Mr. **Green.** No. We will be glad to answer questions now or later, if you would like to submit them.

Mr. **Scheuer.** That was a marvelous statement. We are delighted that you came here today and had the unveiling of this very thoughtful, stimulating, and provocative report before these committees.

Do any of my colleagues have some questions you would like to ask?

Mr. **Lent.** Yes, Mr. Chairman, I have a couple.

Mr. Nader, on page 71 of your report, you say that all of the health/safety and environmental agencies have made a commitment to performance of design standards. Are you aware that the EPA in its proposed regulations under the Resource Conservation and Recovery Act has specifically required design standards for the treatment, storage or disposal of hazardous wastes and not performance standards?

Mr. **Nader.** Where design standards are required, it is usually when there is only one technology that can meet it. For example, seat belts. Until recently that was the only way the industry could meet it, so what was the performance standard was really a design standard. Could that be the case in your example?

Mr. **Lent.** I suppose it could be, but we argued the point in some additional views that we filed recently to a hazardous waste report, that performance standards are preferable to design standards, becaue they are more technologically encouraging. I see that one of the reservations you raise in the report about performance standards is that they might have an adverse effect on small businesses.

However, I understand that a May 1979 report of the small business members who served on the Industrial Innovation Advisory Committee specifically with and, in fact, recommend performance standards and not method standards or design standards, in those cases where regulatory standards are justified. So could you just give us a little bit of your point of view on performance versus design?

Mr. **Waitzman.** I think in the report that you referred to, the Commerce report on innovation, many of the small businesses represented in that report were chemical firms involved specifically in innovative activities, where they would have the expertise and the people involved in testing.

When we talk about health/safety regulation over the entire spectrum of businesses, not necessarily on the edge of the innovative fields, it just generally does not have the expertise to put into the development of performance standards. This is really a question I think more of the impact on innovation for the small businesses, involved in the innovative field, rather than businesses in general complying with health/safety regulation where small businesses are especially hurt.

Mr. **Lent**. It was my understanding if the regulators wanted to design let's say a hazardous waste plant, that was impenetrable, they could either issue design regulations and say that the plant must be enclosed with a 6-foot-high fence of such-and-such length, or they could instead come up with a performance standard which would say that this plant must keep out all intruders.

Now, the second or performance-type standards would leave a greater leeway to technological innovation, where with a design standard, the 6-foot-high fence, we would never go beyond the 6-foot fence, because that was etched in the regulations of the regulatory agency. It would seem to me that performance standards ought to be, wherever possible at least, preferred to design standards, and I wondered how you felt about that.

Mr. **Green**. The report does agree with that presumption, and say that if a performance standard is workable, that it could be preferable, but it is not to the exclusion of design standard in all instances. I cannot comment on your specific EPA example. I do remember that when Administrator Doug Costle addressed a luncheon we sponsored he indicated a preference toward performance standards, but he also urged that there should be flexibility, and that we should pursue design standards if it is necessary in those instances where there is only one technology, as Ralph indicated.

Mr. **Lent**. One other question. I note on page 74 of your report, you say that "Data concerning the operation of the destructive agent asbestos, cotton dust, and noise must be more complete if alternatives are to be evaluated. Such information is not available and never will be."

That particular statement, and others in the report, leaves the impression that the report is biased against any changes in the health and safety regulatory regime, however much scholarly attention has been devoted to possible reform methods. Is it your belief that these types of efforts should be abandoned and the status quo maintained?

Mr. **Waitzman**. No, I do not believe that the effort should be abandoned. I think that particularly in the area of toxic and hazardous substances that there are special concerns with data. If you snuff out noise at the source, if you snuff out asbestos at the source, and if you snuff out cotton dust at the source, you do not deal with the side effects of noise that you are unaware of at the time you institute the standards. For example, tinitis, vertigo, fatigue, secondary threshold effects of noise are not included in your original analysis of your noise standard. You go for an alternative such as earplugs or earmuffs, and lo and behold, you don't get the same sort of effectiveness that you originally thought you were going to get. These sorts of effects, if they are snuffed out at the source, will not arise.

With asbestos you had a transferral of disease through the wash, which is something which occurred after the alternatives were instituted.

In the area of cotton dust you had the respirator, where there are a number of secondary effects. These sorts of secondary effects, you never have data that is complete on that, but if you snuff it out at the source, then you have the time at least to experiment and to deal with this sort of data, rather than using the field and the victims as your experiment ground.

Mr. LENT. When you say in your report that this sort of data "is not available and never will be," it leaves the impression that regulation and regulatory reform are therefore beyond the powers of human reason to evaluate, and I disagree, and I certainly hope that the members of this committee disagree with that particular statement. Certainly, much scholarly attention has been devoted to possible reform measures, and Congress is now in the throes of giving those proposals due consideration.

Mr. SCHEUER. I am sure the panel would agree that we should be seeking to fine tune our thinking, to improve the availability of empirical data, hard data on both costs and benefits, to improve our analysis and to answer such esoteric questions as to what a human life is worth? What it is worth to society, to avoid an accident that would result in hospitalization?

I do not suppose any of us would think that we have come to the end of the line in fine tuning our analysis and fine tuning our production of data.

Mr. LENT. I would certainly hope not, but it appears that the report at least with respect to asbestos, cotton dust and noise, indicates that additional data "is not available and never will be," just a very negative type statement.

Mr. GREEN. May I add to that one sentence, if I could. Adam Smith presumed two centuries ago the consumers would have perfect knowledge, which is one of the bases of competitive capitalism. He would say consumers never would have perfect knowledge but we should aspire to it. Some advocates are biased in your phrase or presume that market alternatives are invariably better than command and control alternatives, to use Charles Schultze's phrase. This report does have the premise that market alternatives are less desirable than command and control alternatives, when you are dealing with hidden harms, immeasurable harms.

Synergistic harms in the area of occupational disease, for example.

Mr. SCHEUER. What is a synergistic harm?

Mr. GREEN. For example, we know that asbestos is a bad thing in the workplace. We know that noise is a bad thing in the workplace, but when the two are combined in the workplace, there is an exponential harm. It is not just additive, but it is especially dangerous if you are dealing with asbestos to be doing it in a place where there is a lot of noise, and there are almost, almost an infinite number of permutations when you look at all the carcinogens in the workplace and other possible injury sources. So when we say it is quite difficult to compile this data, it has historically been quite difficult.

We urge the continual search for new information, but this is an area where one plus one does not simply equal two. This is the ultimate area where it is difficult to measure the benefits of regulation, and sometimes prohibition is preferable to a market alternative which has never worked, and we think probably cannot work in many of these instances.

**Mr. Scheuer.** What are you suggesting then, that at some point in time we simply make an act of faith in the good produced by the regulation? You say at some point in time. We cannot quantify this. We cannot justify this empirically, but it is transparently self-evident that it is good to reduce the carcinogenic effect of asbestos, and it is good to reduce whatever the health effects are of excess noise, and while we cannot document it, we just think that we know enough to go ahead and do it. Is that a bad statement?

**Mr. Green.** No, that is an accurate statement, and let me give you an admittedly dangerous example to support your point—saccharine. Almost all studies have shown a positive correlation between saccharine and cancer, but when they try and correlate——

**Mr. Scheuer.** What is the correlation?

**Mr. Green.** Positive.

**Mr. Scheuer.** You are going to have to tell me. Wait a minute.

**Mr. Green.** I am anwering your question, Mr. Chairman, I think.

**Mr. Scheuer.** All right, go ahead.

**Mr. Green.** When they try to estimate how many people will die from saccharine, studies have ranged from one half a person over 50 to 70 years, if they ingest one can of diet——

**Mr. Scheuer.** One half person per what?

**Mr. Green.** Over a 50- to 70-year period.

**Mr. Scheuer.** One-half a person for the whole country?

**Mr. Green.** Yes, to 1.4 million citizens over that 50- to 70-year period if they ingest one diet soda a day. At some point the Food and Drug Administration would have to make a judgment about what level of saccharine, if any, is tolerable. The point, your point, I think is that you could call it a leap of faith, but when data is unavailable or unconsistent regulators like OSHA today on carcinogens are making judgments about what is safe and what values our society should emphasize, and safety is a primary value, because without a healthy worker or citizen, all other economic benefits cannot be enjoyed.

**Mr. Scheuer.** It seems to me that the whole regulatory process is on shaky ground in the case of saccharine. We let people smoke, and if we let people drink alcohol, which are two known killers. We know we have maybe 11 million people who are crippled and disabled in carrying on their daily lives through advanced alcoholism, and we know that there are several hundred thousand cancer deaths a year. If we let people without any restraint consume alcohol and tobacco, in the present state of the art, and in the present murky state of the data, I wonder whether it makes sense for us to tell them they cannot use Sweet and Low or drink a Fresca.

**Mr. Nader.** I think the difference that we are just discussing is alcohol and cigarettes used in extreme are addictive, and the law has never messed around with people who are subject to addictions, because it is what Roscoe Pound once said, "beyond the effective limits of legal action."

Second, of course, there are laws that——

**Mr. Scheuer.** We could ban cigarettes with carcinogenic elements in them and force the cigarette industry to go to vegetable leaves or other things.

Mr. NADER. But more important I think are two other points. One is that there are people, including children, who are using these sweeteners and do not know it, whereas people who smoke and drink alcohol usually know what it is.

Mr. SCHEUER. Yes.

Mr. NADER. So it is hidden in other consumer products. Second, and probably most important, is that there is a belief that we can substitute with non-cancer-causing alternatives the desirability for low-calorie sweetener, where as nobody has yet developed a substitute, at least acceptable to users of cigarettes and alcohol.

Mr. SCHEUER. My understanding—and I was on the Health Committee when all this went on—my understanding of the whole saccharine controversy is that the average man has something like five one-thousandths of 1 percent statistical lifetime expectancy of getting cancer of the bladder, and that if he uses an enormous dosage of saccharine—I am talking like 50 bottles of Fresca a day—that 0.054, that is right, fifty one-thousandths of 1 percent lifetime statistical expectancy of getting cancer of the bladder goes up to 0.054.

In other words, it goes up four one-thousandths of 1 percent. It seems to me if that is the order of magnitude of the risk, an insignificant increase to an already insignificant risk, that ought to be left to individual choice.

I do not think we ought to leave passive restraint systems to individual choice. Our society has bitten the bullet on that. We do not leave safety glass to individual choice of the consumers. We do not leave collapsible steering wheels. We do not leave directional signals. We do not leave padded dashboards.

Mr. NADER. Fire codes.

Mr. SCHEUER. Fire codes, that is right. We do not tell a person you can live in an apartment house that only has one exit, and it will cost you 75 cents a month less in the rent if this landlord chooses to put in two exits but this guy only one exit. And if you are a high-risk guy there is another fellow down the street where you can save $2 a month rent, he is not putting in any fire-protected stairwells. We do not leave that to the consumer, but it seems to me when you get to this order of magnitude of risk, that that might be left to market choices, and maybe we should just say, "Put some kind of a warning on," but let the fellow, if he thinks that it is contributing to his lifestyle to take Fresca instead of Coke, at some point it seems to me there ought to be some residual decisionmaking where there may be a theoretical danger of harm. But there is not a Government intervention.

Mr. NADER. Wouldn't it be nice to be able to have Fresca that didn't have a cancer causing substance that fulfilled the same yearning, and if we don't ban the existing offending one, the marketplace and the producers aren't going to develop the safety substitute.

The best figures I have seen indicate that maybe 1,500 bladder cancers a year occur in this country because of the use of these sweeteners, and that is not a huge figure but it certainly is a figure that compels us to say why not ban it if you can find a substitute low calorie that doesn't cause 1,500 bladder cancers.

Mr. **Lent**. It is true the basic thrust of this report is negative to the whole sense, if you will, of cost-benefit analysis, and what I am trying to say to you is that cost-benefit analysis, despite its imperfections, is one of the tools that we ought to use in Government in determining how to allocate our resources.

Now, let me just make what I think is an example here. At page 72 of your statement, or of your report, you use the example of sulfadioxide emission scrubbers. Do you have that?

Mr. **Green**. Yes sir.

Mr. **Lent**. One scrubber reduces emissions from 0.5 to 0.08 per million while another method reaches 0.12 parts per million at two-thirds of the cost.

Now, how would you suggest that society decide or society's Congress decide which method to use in your own example or in similar situations where emissions could be reduced from one minuscule amount to another but at tremendous cost. Your report doesn't seem to answer that question.

Mr. **Green**. The report doesn't say we shouldn't employ cost-benefit comparisons. In fact, we use the phrase that you just used. We suggested as a tool, we also add there should not be a straitjacket. There are many people, Professor Weidenbaum being one of them, who does the most widely cited cost studies who urge a—Senator Dole is introducing a bill to this effect that would prohibit any agency from instituting a regulation unless it could provide affirmatively that the benefits exceeded the costs.

Mr. **Lent**. I think that is Senator Bumpers.

Mr. **Green**. Senator Bumpers' amendment dealt with judicial presumptions review in court. Senator Dole is about to introduce an amendment to the effect I just mentioned.

The average American would say that is a good idea.

Mr. **Green**. As a phrase, cost-benefit analysis is at least as good a prolife or truth in lending as a political phrase.

Mr. **Scheuer**. Or right to work.

Mr. **Green**. Or right to work. It sounds terrific until you examine its basis.

Mr. **Lent**. Or hospital cost control?

Mr. **Green**. And what some of your opening remarks indicated, Mr. Rinaldo and Mr. Scheuer and our report indicated, that very simply, often the costs are exaggerated by a business community who controls the data and is reluctant to share it. The benefits are often measurable.

Generationally, I don't know how many daughters of women who take DES today will get cervical cancer in 30 years. I know some will. If you have a formal cost-benefit tests it implicitly is prejudicial to those who think regulations should capture as many benefits as possible.

To go from 0.12 to 0.08 is a judgment that the best experts in agencies overseen by Congress should come to, even knowing that they can't have all of the information at their disposal. In each case it is a judgment call and I can't generalize between seat belts, asbestos, or smoking. Each of you have to judge the social value and benefits involved and the political realities involved.

For example, smoking, which we don't urge——

Mr. LENT. You do acknowledge, at least I thought I heard you acknowledge, that in making this determination of which method to use, as between two types of sulfadioxide emission scrubbers, that cost-benefit analyses as such does creep back into the equation, so it has some viability?

Mr. GREEN. Absolutely. It does have viability so long as it is not imperative.

Mr. WAITZMAN. The point was made in the report in referring to the first sentence in that section that cost effectiveness is supposed to separate itself from the problem of quantifying benefits, the problems of putting a price on life, the sort of intangible sort of thing. This example was used to illustrate the fact that cost effectiveness analysis does not really do that, that when it comes down to it, the benefit analysis, all the hard stuff of quantifying the intangible has to eventually be done in a cost effectiveness analysis. Cost-effective analysis is a little brother of cost-benefit analysis.

Mr. LENT. If we use the standard of more safety is better, and that is our only standard, then if we were to apply that across the board we are going to run into situations where society might demand that emissions be reduced from 0.00002, to 0.00001 part per million, and the cost of this would be enormous, it would be more than society and our economy could bear.

How would you as authors suggest that these types of decisions be made?

Mr. NADER. Because if the costs become that exorbitant then perhaps less money spent on solar energy would prevent the need to burn coal and produce sulfur in the first place. So we work on alternative substitutes, not just going down to the tenth decimal point that is involved. Also the cost of a safety system reaches its peak in the first year and then goes down as it is amortized and as it has a learning curve and as it is taxed out under investment tax credit, whereas the benefit continues year after year.

For example, there was a tiny cost per collapsible steering column in cars when they put them in over 10 years ago and now it is zero, it is just part of the car, it is not any costlier than a noncollapsible steering column. Every year people are collapsing their steering column in collisions instead of having the steering column rammed into their chest with serious injurious effect.

Mr. SCHEUER. You could say that on a cumulative basis for all the things that the safety devices that are now accepted as commonplace in cars and not considered a current add on?

Mr. NADER. Yes, sir.

Mr. SCHEUER. For the purpose of safety?

Mr. NADER. That is right.

Mr. SCHEUER. We don't consider directional signals and padded dashboards options?

Mr. NADER. That is right. They are no more expensive than what their dangerous predecessors were in the old days and probably less, because in the old days you had to change the style of the metal dash panel more frequently than you do now with the padded dash panel. How can you change the style of padding?

More important is take the kepone. The first expenditure is quantified and then for thousands of years people who inherit this country will reap the benefits, and that is what business doesn't do, because business judges its peformance on a very short calendar, on its balance sheet year to year, and society has got to judge its performance on a much longer time span. The collision of those two different time conceptions is at the root of a lot of our problems.

If, let's say, hypothetically, corporations measured their economic progress only in 20-year increments, they would behave differently than if they measured their progress every year in a profit and loss statement on a 12-month basis.

Mr. SCHEUER. We have been joined by Congressman Richard Preyer of North Carolina.

Mr. LENT. I have no further questions at this time.

Mr. SCHEUER. Thank you.

You refer on page 77 to the whole collection of OSHA horror stories that are nitpicking about toilet seats, exit lights, extinguishers, ladders and so forth. Then you cite on the next page that they eliminated in one fell swoop just under 1,000 of them, 982 of these were wiped out, and I don't suppose that the health of the workers has been seriously prejudiced by that.

It seems to me that it would fortify the case of those who have a general predilection to these sensible and rational extensions of regulations on health, safety and environment, where they seem to make commonsense, rational justification, if we could sort of extend this scrutiny of the existing web or network, of health safety, and environmental regulations, and bring them under some kind of cost-benefit scrutiny. If we could wipe out some of the regulations on a cost-benefit basis that really haven't panned out, where the original assumptions on which they were based have turned out to be false. It seems to me if we could do that and we could free industry from some of the burdens where there didn't seem to be a real benefit payoff, it might help clear the environment and might help defuse some of the criticism that has been levied at worthwhile regulations.

Can you give us any suggestions as to what procedures might be followed to extend this OSHA reappraisal of their whole web of regulations so that in all of the other regulatory agencies we might be able to clear the air and, as I say, defuse some of the criticism?

Mr. NADER. First, we could shift the chairs with industry and recommend the abolition of a great deal of cartel regulation like the Federal Maritime Commission and the ICC.

Of course, industry will come in and say we want this regulation because it shields us from the rigors of the competitive market system.

Second of all, many of the OSHA's standards have been repealed verbatim, acceptance of standards from industry standards groups verbatim, and many of those standards are certainly not those that affect the higher priority of the OSHA mission, such as in the area of toxics which OSHA should pay a much higher priority to.

As far as other standards that may be obsolete, there may be some obsolete standards. I think there are a lot of standards that need to be upgraded, so that by definition the existing standards are weak and not very useful.

For example, there has not been a new tire safety standard since 1967 applied to tires in the United States.

Mr. **Scheuer.** We did pass in the House of Representatives yesterday an improved tire recall provision.

Mr. **Nader.** Yes.

Mr. **Scheuer.** It gives the Secretary of Transportation the right in the case of a tire defect not only to mail a notice but to require a public notice if after consultation with industry it is determined that there are a substantial number of car owners whose tires are not registered. We think that is a vast improvement. I am happy to say that that law came out of this subcommittee, unanimously, with the full support of the minority, and came out of the full committee unanimously, and was passed yesterday on the consent calendar by a vote of almost 100 to 1. I think there were not more than 8 votes against it and more than 300 for it. So some progress is being made on tire safety.

Mr. **Nader.** On the Firestone 500——

Mr. **Scheuer.** You are absolutely right, and it was the statistics emanating from that experience that indicated that we could only reach about 45 percent of the tire owners through direct mail notice. It was absolutely that experience that alerted us to the fact that many of them were unreachable by mail and that, therefore, in a case exactly like that the Secretary of Transportation ought to have the authority to require a public notice by advertising. That is one case where Congress really did respond.

It doesn't happen all that often. But do give us credit when it does happen.

Mr. **Green.** You were asking what Congress can do. There are regulatory reform bills pending. President Carter has a version, Chairman Kennedy has a version, Chairman Ribicoff has a version, and they agree in some areas, they agree for periodic review of major rules affecting commerce over $100 million. Such rules shouldn't be in existence forever, but you should periodically look at them where necessary, where the market abuse gave rise to them has not been corrected, they urge regulatory analysis. When you are deciding whether or not to pursue a proposed rule, you list the intended gains and benefits, economic and other, and you list the potential consequences.

This does not glorify cost benefit analysis, which lacks a precision, that we are arguing because of lack of precision, should not be made part of the law, but it indicates regulators should roughly list the anticipated or intended gains or costs and then come to a judgment based on it and no one could have objection, I think, to that.

Third, the Chairman Kennedy version would require a compliance survey. This is new. There are many regulatory laws we agree should be regulatory laws. Trucks should not be overweight on highways because it hurts highways and hence the taxpayer. Such laws are frequently violated.

Agencies could do surveys indicating what percentage of affected companies or firms or industries are violating existing laws. Since enforcement bureaus in these agencies are unfunded you only know the small docket of cases where companies are moved against. Such a compliance survey might indicate that good regulatory laws are often violated, which would lead to greater resources to enforcement bureaus to uphold these laws.

Mr. **Scheuer**. Congressman Preyer.

Mr. **Preyer**. I am sorry I missed the early part of your testimony but I do think it is important that we counteract some of the conventional wisdom that has become a cliche now that regulation is bad and that being interpreted as all regulation is bad. I am probably a lot stronger free market believer than any of you are, but I think we certainly have to discriminate where the free market doesn't work, and it certainly doesn't work in environmental matters.

On a thing like the Hospital Cost Containment Act, where Alfred Kahn says what is a nice deregulator like me doing supporting the Hospital Containment Act, and the reason is because there is no free market really in the hospital cost. So I think emphasizing the other side of the coin here is important.

On something like oil decontrol, I am for decontrolling prices. I disagree with you on that. But I think that the approach that is being taken, if we decontrol that, that solves all of the problems and everything would be beautiful is totally wrong. We know there will be distribution of income problems. We know there will be inflation problems, and Congress has to address those.

So what seemed to me when we talk about regulation, we should talk a little bit more about using our intelligence and discriminating, and that is supposed to be what we are here for and not say all regulation is bad.

I think you have made a real contribution to what is a sweeping tide now in the country, any regulation is bad. Some of it is very necessary.

Thank you for your statement.

Mr. **Nader**. Thank you, Congressman Preyer. We appreciate those comments.

Mr. **Scheuer**. David Nelson.

He is a staff economist with the Oversight Investigations Committee.

Mr. **Nelson**. I just have a few questions. I would like you to expand somewhat on some of the points you made in your report.

I notice that, you mentioned the DC-10 as an example of the public concern over the need for regulation. John Kenneth Galbraith suggests that the lack of outcry from the more vocal proponents of cost-benefit analysis against the grounding of that plane may have something to do with the fact that economists ride airplanes but don't breath cotton dust.

Can cost benefit analysis be useful as a tool as long as there is no way to deal with the equity questions which arise whenever the cost and benefits accrue to different groups in the society?

Mr. **Green**. Professor Galbraith has put his finger on a point that many other people have missed.

Prof. Nicholas Ashford, I think, testified before your committee previously, I haven't yet read his testimony, but we have read some of his prior writings, and he is eloquent on the point that regulation often involves equitable issues that are not defined by cost-benefit analysis.

For example, if OSHA insists that employers pay slightly more money to ensure the safety of their workers, presumably there is a shift in cost from shareholders—I am sorry—there is a shift in benefits to workers from shareholders. Someone is going to have to pay for injury. Either it is going to be the worker who pays in terms of injury and out of pocket expenses, or it is going to be perhaps the shareholder in slightly lesser dividends to assure that the worker is safe.

This is one of hundreds of examples of who pays and who benefits and distributional issues like this are really issues that should be decided ultimately by political figures elected by the public reflecting fundamental values and not merely economists who have a role to play in this, but not a definitive role, because ultimately it is a matter of judgment and choice and value whether the worker pays through injury or the shareholder pays through lower dividends.

Mr. NELSON. Most of the studies that you looked at, and your appendix is very large, have been performed by consulting firms working for either the Government or for private interests. Did you find any evidence the self-interest of these firms play a role in the quality of their analysis?

Mr. NADER. We put out our book recently on think tanks and their work for the Federal Government and certainly the people who work with think tanks know how to select them.

I am sure if Chrysler was looking for a good think tank to support its case it would go to Harbridge House. These consulting firms often have conflicts of allegiance, they are working for both sides of the aisle, and when they work for Government they don't forget that they also get their bread and butter from their business clients, and that is one reason why you get stacks of experts on both sides of the question.

It isn't that one expert is smarter than another, it is that they incorporate nonquantifiable values like their bread and butter and future business prospects.

Mr. SCHEUER. You are telling us figures don't lie but liars often figure?

Mr. NADER. I think one of the greatest sources of anxiety in this country is the public looking at experts with relatively equal credentials on exactly the opposite side of the question. And you can have a physicist for nuclear power, a Nobel Prize winner and a physicist against a Nobel Prize winner, and they disagree over physical facts or principles because they disagree over their estimate of human frailty, of whether it is an acceptable risk in the overall scheme of things for a society, and so forth. And so these consulting firms are very, very subjective in their work.

Mr. NELSON. Would it help for regulatory agencies to develop an independent capability to perform cost-benefit analysis?

Mr. NADER. I think it is critical to the regulatory process. I think that if they don't have—I have always said that any regulatory framework should give the agency three functions, one, a research and development function; two, a standards function; and three, a recall function. And a lot of these agencies are still consulting out at great expense to the taxpayer.

Mr. NELSON. Thank you.

Mr. SCHEUER. Your report doesn't touch on the question of competition and how that would benefit the consumer. It may have been beyond the purview of the cost-benefit subject of that report, but it seems to me that society needs competition. You also mentioned the whole question of cartels. We are going to have a set of hearings on the phenomenon of the cartel in American life and the effect that it has on consumers—the effect that they have on the marketplace.

We are going to have a separate but very much related set of hearings on productivity. It is going to be sort of an update on the TNEC report of the 1930's that you may remember. And, incidentally, Gardner Means, who was executive director of this report in the thirties is still alive and kicking and full of beans. He is going to be working with us—40 years after the TNEC on updating the report of which he was executive director for in the thirties.

We are going to be looking at the restraints on productivity and how they affect the consumer. It is interesting to me that our steel industry, which after all, is a high technology industry, it is very capital intensive, can't produce steel and meet world competition.

Not only can't we sell steel around the world in competition with the Swedes and the West Germans and Japanese, we can't sell steel FOB Pittsburgh. Therefore we have to enshroud this whole industry with a protective cocoon of import limitations, tariff barriers and all that, so they won't have to meet the foreign competition.

And that is not a function of slave labor. The West Germans, the Japanese, and Swedes all pay their labor better than we pay our labor. We are No. 5 or 6 in the world now in terms of labor rates and income, per capita incomes for blue collar production workers. So these countries that pay their labor better than we do are all able to sell steel in Pittsburgh on the freight car cheaper than United States Steel and Bethlehem Steel on a freight car in Pittsburgh.

Now, that has to send you some signals about our whole coterie of imperfections in our market system—our much flaunted market system, our free enterprise system. It tells you something about corporate decisionmaking and tells you something about the burdens that we have been placed on free market forces that otherwise would redound to the benefits of consumers.

Have you done anything about that?

This may be a little off target. It seems to me the Federal Trade Commission has a mandate to look into competitive practices or absence of competition.

For example on the whole question of cartelization, you mentioned that really hurts the consumers and prevents the consumers from getting the benefit of competition.

Mr. **Green**. Mr. Chairman, in 1971, we published a book called the "Closed Enterprise System." In 1972 we published the book called the "Monopoly Makers," and the premise of both was the premise of your comment, I think. We are supporters of economic competition, where markets are workably competitive because it leads to lower prices, greater innovation, greater diversity.

Here we disagree with many businesses in this country who are not supporters of competition, like the steel industry, because they don't fare well at it for a variety of reasons, many having to do with the oligopolistic structure of their particular industry.

For example, the steel industry has always been embarrassed that it was an Austrian plant one-third the size of the average U.S. steel plant which developed the oxygen furnace technology which is now the prevailing technology in the steel industry.

Early in 1973 Ralph and I wrote a letter to the chamber of commerce and urged them to join with us in an effort to deregulate the Federal Maritime Commission, ICC, Civil Aeronautics Board, agencies which frustrated competition. I haven't gotten a reply yet, have you?

Mr. NADER. No.

Mr. SCHEUER. Why don't you give us a copy of that letter and maybe we will ask them what their response is, even at this late date.

Mr. NADER. At the time, they indicated it was premature for them to make a judgment on such issues, which is another way of saying they had to check with their constituent members.

Mr. SCHEUER. The President has made a judgment, he is beginning to move in the area of deregulation.

It is interesting to me that you can buy an airplane ticket from Los Angeles to San Francisco for about a third less than from New York to Washington, which is a half distance. In other words, the cost per passenger mile is about two thirds as much. The only real difference being that transportation from Los Angeles to San Francisco is not in interstate commerce and, therefore, is not encumbered by the restraints on competition that you get from air travel in interstate commerce between Washington and New York. The Federal agencies impeded competition. You wonder where the benefits to the consumer are when the cost per passenger mile is almost double.

Mr. GREEN. This report today doesn't discuss these issues because while we support competition where it is viable, we also think that the dynamics that lead to kepone in the James River different than the dynamics of someone buying a toaster. They are both market activities.

Ralph, in his opening statement, said the difference between airplanes, which could be competitively priced and airbags, which is a technology that the auto industry has rejected, and that health safety regulation is fundamentally different in purpose and application than cartel regulation, which is why we often support the latter and only support health safety regulation and almost invariably oppose what we call cartel regulation.

Mr. SCHEUER. One last point.

You in your report, looked at licensing rate setting, route awards, regulations affecting environment, safety, and health. You didn't look at regulations designed to promote economic or social justice. We hear complaints from industry about the cost of fair employment practice regulations, regulating relations between competitors and between sellers and consumers, the whole field of regulations promulgated by the Equal Employment Opportunities Commission, EEOC, and to some extent by the Federal Trade Commission. They keep questioning whether the benefits that have been achieved are clearly superior to the cost.

We know of great cost to universities of monetary costs and other costs of complying with some of the murkier requirements of the mandates that have been placed on them, for example, to employ women and blacks. The benefits to a few are clear, the cost to the universities are sometimes enormous.

Have you had a chance to think about cost and benefits in this whole field of regulations to achieve social and economic justice?

Mr. **Green**. An economist who was value free could argue that slavery was cost effective.

Mr. **Scheuer**. Of course it wasn't. It was an economic disaster and would have fallen by its own weight very soon had there not been any Civil War.

Mr. **Green**. I hope you are right and I assume you are right. Let's say slavery in 1792, before Eli Whitney invented the cotton gin, one could have argued it was efficient to the plantation owner, not efficient to the slaves. The point is that I don't know the exact value to a black person or a black in this country to not being discriminated against when they try and exercise their natural talents.

There is a value to the country in terms of justice that all peoples skills are treated equally but it is not easily quantifiable.

We would not discuss this in the report because although our skepticism of cost-benefit analysis certainly applies as well to this problem as it does to carcinogens and the environment.

Mr. **Scheuer**. Perhaps even more because the benefits are so very difficult to apply quantitatively in terms of dollars.

Well, our timing seems to have interfaced very well with what is going on on the floor of the House. We thank you very, very much for this very thoughtful report, and we are looking forward to our second day of hearings on it.

Mr. **Nader**. Thank you, Mr. Chairman.

[Testimony resumes on p. 317.]

[The report entitled "Business War on the Law: An Analysis of the Benefits of Federal Health/Safety Enforcement" follows:]

# BUSINESS WAR ON THE LAW:
## AN ANALYSIS OF THE BENEFITS OF FEDERAL HEALTH/SAFETY ENFORCEMENT

BY

MARK GREEN
NORMAN WAITZMAN

THE CORPORATE ACCOUNTABILITY RESEARCH GROUP

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## ERRATA

1. Page 6, line 11, should read: *Public Opinion magazine*....
2. Page 8, line 13, should read: *over $17 billion*....
3. Page 11, line 6, should read: *$2 million and $12 million*....
4. Page 23, paragraph 2, lines 5 and 10, should each read: *$50*....
5. Page 36, paragraph 2, line 8, and page 90, paragraph 1, line 5, should each read: *23.3 billion*....
6. Page 41, paragraph 2, line 3, should read: *the white male before the black woman*....
7. Page 95, textual footnote should read: *this figure includes no benefits from control of water pollution*....
8. Page 96, paragraph 2, line 4, should read: *number of lives saved in 1978*....
9. Page 111, line 2, should read: *NHTSA regulation for 1978*....
10. Page 131a, third column entitled "Benefits in 1978," should read: *EPA 23.3, and total 27.1*....
11. Page 131a, fourth column in the table, should be headed: *Benefits in 1985*....
12. Page 137, footnote 94, should read: *cited in note 93*....
13. Page 139, footnote 123, should read: *Fortune, May 1978*....

**MARK GREEN** is the director of Public Citizen's Congress Watch and the author or editor of several books on government, business and law, including Who Runs Congress? (1979, 3d edition), Taming the Giant Corporation (1976), and The Other Government: The Unseen Power of Washington Lawyers.

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# INTRODUCTION

Mark Green

When the Russian biologist Lysenko created the myth in the 1940's that acquired traits could be inherited, the Soviet regime adopted his theory as State doctrine since it reinforced government policy about the "New Soviet Man." So too does the myth of the "excessive cost of government regulation" serve the needs of corporate doctrine -- though it is about as reliable and scientific as Lysenko's theory of genetics.

We see the evidence of this campaign against health/safety law enforcement all around us -- from company annual reports, to studies of the "costs" of regulation, and newspaper advertisements that blame federal regulation for inflation, unemployment, and the decline of the dollar, productivity, and Chrysler. A representative sample of such corporate advertising is included in Appendix A, as well as Herblock's reply to them.

There are several problems with this catechism. It rarely pauses to distinguish between unnecessary and wasteful cartel regulation (say the prohibition on backhauls by the Interstate Commerce Commission) and life-saving health/safety regulation (100,000 Americans are alive today because of federal highway and safety enforcement since 1966). Assuming national amnesia, it fails to acknowledge why there is regulation in the first place: viz., humane capitalism shouldn't tolerate the conditions of The Jungle (1906), thalidomide, 30,000 product-related deaths annually, 50,000 car fatalities a year, or 100,000 annual deaths from occupational disease alone.

It also seems based on theology before analysis, or as the Queen said to Alice, sentence first, verdict later. One need not be a psychologist to realize that the traditional business ideology of economic darwinism and the powerful self-interest to exaggerate the burdens of regulation lead predictably to the "Chicken Little School of Regulatory Analysis." Examples of this impulse range from business leader Richard Whitney's prediction in the early 1930's that federal securities laws would destroy the securities markets to the more recent claim, later discredited, that there would be no spray cans without flurocarbons. To accept business' claims about the costs of regulation at face value is about as credible as asking a D.A. if he thinks a defendant is guilty.

And finally, in concept and language, the corporate catechism seems to assume that there are only "costs" of regulation, not "benefits." Here, the business rhetoric of the 70's is about as sophisticated as the business rhetoric of the 50's, when the talisman of the day was not "the costs of regulation" but "creeping socialism."

The conceptual and empirical weaknesses of the business war on regulatory law have kept it from making substantial advances in public opinion. An analysis of poll data in *Public Opinion* magazine by Seymour Martin Lipset indicated continuing strong public support for specific health/safety regulation. Everett Ladd, Jr. a year ago in *Fortune* concluded that Americans over the past decade or two "have become *more* demanding of governmental services...the heart of the indictment is a call not for *less* government but for *better* government. In 1968, reports George Gallup, 49% of the public thought "Big Government" was the greatest threat to the nation and 12% thought "Big Business." In May of 1979 the numbers were 43% and 28%, which does not indicate a trend that demands the abolition of OSHA or the FDA.

Despite its substantive failings and public unpopularity, however, the corporate case against regulatory costs is making headway in Washington. Ideas are being seriously considered that are as constitutionally and/or administratively defective as the legislative veto, sunset, formal cost-benefit analyses, presidential intervention, and the "Bumpers Amendment" to end the judicial presumption in favor of agency decision-makers. And the Carter Administration puts pressure on consumer and environmental law enforcers to do less, never more. According to the *Wall Street Journal*, which follows these matters diligently, "Mr. Carter has turned the screws on social regulators more effectively than did either of his Republican predecessors."

This report is based on the assumption that slogans eventually collide with reality and that anti-regulation slogans are beginning to wear thin in a year that has witnessed Three Mile Island, Love Canal, the DC-10, and the scaffold collapse at Willow Island. On the subject of federal health/safety regulation, it is time for a backlash to the backlash.

Specifically, this report's major sections attempt to demonstrate that "cartel regulation" and "health/safety" regulation are as different as airplanes and airbags, that the costs of regulation are biased upward by business advocates and their retained economists, that "cost-benefit" analysis is a primitive tool that inherently discriminates against beneficial regulation, and that the best studies of the benefits of five major federal health/safety programs -- OSHA, FDA, NHTSA, EPA, CPSC -- indicate that the life-saving and economic benefits are over $37 billion in 1978, will be $80 billion by 1985, with a potential annual benefit of over $200 billion. A chart on page 131a has a breakdown of these figures agency by agency.

It is our goal to balance the debate over regulation by reconceptualizing it and by developing new data. This debate is now conceptualized as one over big government, when the real issue is corporate crime and public health. For if the willful corruption of a town's river and air, if the marketing of a dangerous tire or car, if the toleration of a hazardous work site that can lead to death or injury is not criminal, then the word has lost its meaning. (Hence the title "Business War on the Law" -- for regulations that seek to protect consumers and workers are not "red tape" but law.) Also, as participants in this debate talk less about abstractions and more about the victims of market abuse, the perception of what is at stake in the issue of "regulatory reform" becomes more compelling. Consider Neil Goldschmidt, the incoming Transportation Secretary, who told a television interviewer that he would not casually cut back on auto safety regulation because "it is very hard to tell somebody who has turned into a paraplegic or epileptic because of an automobile accident...that there isn't any reason for the government to pay attention to safety standards."

New data are essential since existing data -- developed by drug firms not drug consumers, by trade associations not labor unions, by industry economists and not consumer activists -- have proven so one-sided and distorted. As our analysis indicates, for example, Murray Weidenbaum's estimate that all federal regulation costs over $100 billion is a consumer fraud -- ideological arithmetic that should be interred with the claim that the chances of getting injured in a nuclear accident are about the same as being hit by a meteor.

A compilation of benefits data, however, was not without risk. Many of the existing studies were crude; this field is in its infancy. Also, some colleagues warned us against quantifying benefits at all, because it would require the valuation of life and because benefit studies invariably understate, due to their inability to measure aesthetic gains, psychological suffering, or equity and distributional gains. But the authors and Ralph Nader, who supports the Corporate Accountability Research Group, thought it important to utilize and encourage an analysis of benefits. So while this report is, to our knowledge, the first attempt to both quantify and synthesize the benefits of health/safety regulation, it surely won't be the last. We welcome subsequent scholars and officials to critique our effort -- and then to build on it and go beyond it.[*]

October 1, 1979

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[*] The authors would like to thank those interested scholars and officials who took the time to read all or sections of the report pre-publication -- and who cannot be blamed, tempting as it may be, for any of the content that follows. They were Professors Nicholas Ashford and Robert Woolcott; Frank Greer and David Bell at the Occupational Safety and Health Administration; Barry Felrice and Mahesh Podar at the National Highway Traffic Safety Administration; Edwin (Toby) Clark at the Environmental Protection Agency; Richard Heller and Warren Prunella at the Consumer Product Safety Commission; Clarence Ditlow of the Center for Auto Safety and Benjamin Gordon of the Health Research Group; and Samuel Waitzman. Brian Hamer contributed significantly to the section on the EPA. Finally, we appreciate the editing and production assistance of Daniel Becker, Elizabeth Jensen, Rachel Shimshak, Beth Curry, Lucy Ann Craig, Judi Trott, and Robert Massie.

## I. RATIONALE FOR REGULATION

> The Subcommittee's study rests heavily on a distinction between (a) economic regulation and (b) regulation designed to protect the public from health and safety hazards....the Subcommittee looked for opportunities to reduce economic regulation....In contrast, the Subcommittee concluded it is necessary to strengthen health and safety regulation.
>
> House Oversight and Investigations
> Sub-Committee Report, 1976

The distinction made over two years ago by the Moss Committee above is no less relevant today. Indeed, considering the avalanche of economic studies that has recently inundated Washington, indiscriminately lumping together economic regulation with health, safety, and environmental protection, it is necessary to explain the different rationales for the different forms of regulation.

Federal economic regulation, in the form of rate-setting, licensing, and route awards, is justified when the marketplace fails to conform to a workable competitive model--due, for example, to natural monopoly, scarce resources, or predatory pricing. The Interstate Commerce Commission (ICC), Civil Aeronautics Board (CAB), Federal Maritime Commission (FMC), Federal Communications Commission (FCC), and Federal Power Commission (FPC), agencies charged with such responsibilities, have generally taken on an industry-specific form. Whatever the original impetus, however, a consensus of commentators agrees that the actions of such agencies have often initated and entrenched monopoly in situations where the marketplace could have been more competitive.[1] "Most of them were designed not only to monitor 'natural monopolies'," states John Tirman of Nation, "but, in effect, to insure their hegemony."[2]

Health, safety, and environmental regulation, on the other hand, seeks to preserve values fundamentally different from traditional commodities--

a healthful, clean, and pristine environment, a safe and healthy workplace, hazard-free products--values that the marketplace hasn't and can't produce for consumers. A consumer may be able to self-evaluate price but not whether carbon monoxide--colorless, odorless, tasteless--is seeping into his car's passenger compartment. A shipper may have the choice between shipping his goods by truck or train. No consumer can choose not to breathe fumes of his neighbor's Pontiac, or choose to ignore the noise of the overhead airplane--transactions in which he not a formal party. Fletcher Byrom, chairman of Koppers Company recently noted, "You know and I know that the market system would not give us environmental protection, worker safety and health. They are not economic things; they add value, not wealth. The only way to improve the quality of health is through intervention."[3] In contrast to the "cartel" agencies, then, the mandates of the health/safety agencies--Environmental Protection Agency (EPA), Occupational Safety and Health Administration (OSHA), National Highway Traffic Safety Administration ( HTSA), Consumer Product Safety Commission (CPSC), and Food and Drug Administration (FDA) among others--are function-specific and often sweep across industry lines.

Unfortunately, the different basis underlying these two kinds of regulation typically has eluded many economists and many ideologues. It has especially eluded many ideological economists who assume as a matter of religion that a marketplace that can allocate truck routes through the price mechanism can also adequately protect citizens from pollution and workers from long-gestating and work-related disease. To think along such lines is to confuse apples and oranges, as a more detailed look at the two basic modes of regulation reveals.

## The Economic Rationale for Cartel Regulation

Natural monopoly and scarce resource are paradigmatic rationales for cartel-type regulation.[4] Natural monopoly arises when the market can sustain only one firm of optimal size. Because of steadily decreasing costs, only one pipeline can most efficiently serve a geographic area. Similarly, a market, until recently, was rarely large enough to support more than one utility of efficient generating capacity. According to economic theory, the government intervenes in these cases, by setting prices and regulating profits, to temper the undesirable economic consequences of monopoly--which is the production of fewer goods at higher prices than competitive industries. The assumption is that a regulated monopoly is better than a private monopoly.

A scarce resource may create the need for coordination. Chaos would erupt if anyone was permitted to enter on the same frequency on a radio band. Consequently, there is licensure for entry.

A similar case arises with pooled natural resources like oil and natural gas. Conservation of large amounts of such resources might be best from society's vantage point. Without specific title to the resource, however, the individual firm, at least in a perfectly competitive environment, has the incentive to extract as much as it can as quickly as possible. Individual goals are therefore at odds with societal goals. To avoid what has been called "the tragedy of the commons," regulation of oil and gas for conservation purposes has been justified.[5]

## Political Rationale for Cartel Regulation

Since the economic rationale is often unpersuasive, a hybrid of political-economic theories have been offered to explain the phenomenon of government as price-fixer, entry barrier, indeed, as "monopoly-maker."

In his "life-cycle" hypothesis, Marver Bernstein contends that the Granger movement and railroad workers had their own proponents in Congress during the nascent stage of the Interstate Commerce Commission. When the Commission was established under the Act to Regulate Commerce in 1887, its stated purpose of providing "just and reasonable rates," according to Bernstein, was a genuine reflection of Congressional intent to counteract "The public be damned" sentiment of railroad tycoons like William H. Vanderbilt. Only later did it "become an integral part of the structure of the railroad industry and /today/ its record reflects its commitment to the welfare of that industry."[6] The regulatory agency becomes captive to industry, in Bernstein's generalized theory, only after a concerted effort to remain independent is thwarted by the legal entanglements which characterize "middle age."

> The close of the period of maturity is marked by the commission's surrender to the regulated. Politically isolated, lacking a firm basis of public support, lethargic in attitude and approach, bowed down by precedent and backlogs, unsupported in the demands for more staff and money, the commission finally becomes captive of the regulated groups.[7]

Where Bernstein concentrates on a general evolutionary pattern within the agency itself, Gabriel Kolko's focus is predominantly on industry's powerful economic and political clout. In what has come to be known as the "original intent" rationale for economic regulation, Kolko regards the creation of the ICC as a victory for J.P. Morgan after a series of frustrated attempts to cartelize the railroad privately. The railroad barons favored regulation from the beginning:

> Federal regulation appeared to many railroad leaders as a safe shield behind which to hide from the consequences of local democracy, as well as solving their own internal problems... From its inception, the I.C.C. entered into a condition of depending on the railroads, and railroads quickly began relying on the Commission as a means of stimulating their own ends.[8]

Others have suggested that the regulatory agency develops a vested interest in the welfare of the regulated industry in order to bolster its own image. An "iron triangle" is said to emerge between the regulator, the regulated industry and Congress, each depending on the other for mutual support.

"Rarely does the President appoint, and the Senate confirm, a commissioner if the regulated industry is politically aligned against him," states economist Roger Noll. "While the appointment process does not necessarily produce commissioners who are consciously controlled by the industry they regulate, it nearly always succeeds in excluding persons who are regarded as opposed to the interests of the regulated."[9] A study performed by Common Cause in October, 1976 revealed that over half of the regulatory commissioners who were appointed during fiscal years 1971-75 came either from companies regulated by their agency or from such companies' law firms. In addition, nearly half of the commissioners who left during the same period went to work for regulated industries or their law firms.[10] All but two of the commissioners who left the ICC during the 1960s have either gone into the transportation industry or become practitioners lawyering for the industry. Large firms in the nuclear industry, including Babcock and Wilcox, Combustion Engineering, Gulf Atomic, General Electric, and Westinghouse provide the training ground for Nuclear Regulatory Commission employees. As of 1976, 307 of the 429 senior NRC personnel had been employed by private firms active in the energy field.[11]

Whichever political rationale is selected to explain the failure of the "public interest" goals of economic regulation, documentation is not a scarce resource. By assigning VHF channels rather than UHF channels, and by assigning them to localities rather than population centers, the Federal Communications Commission virtually assured the national network triumvirate--CBS, ABC, and NBC--immunity from competition.[12]

Nor has the FCC vigorously opposed other anti-competitive practices of the major networks that impede potential entrants — e.g., tight affiliate contracts with independent stations, strategic ownership of stations which reach 32% of the viewing public, "copyright exclusivity" where network reruns become immune from competitive bidding, and illegal advertising rate discrimination that give special rates to sponsors where entry is a threat.

Satellite communications, cable television, greater use of the Ultra High Frequency (UHF) spectrum, and pay T.V. could make formidable inroads into the market of the major networks, but have been hamstrung by FCC policy.[13]

Another area where technical change has eroded the natural monopoly argument for regulation is in the generation of electricity. Because of the high voltages that are used today, transmission of power is profitable over distances ranging as high as 850 miles. Plants in separate regions could compete for the right to serve cities, but vertical integration of generating companies--their ownership of local distribution systems[14] and pooling agreements[15] which discriminate against smaller systems--have worked against such competition. As of 1973, the FPC had never exercised its authority to alter discriminating pooling agreements nor had it ever refused a merger when its stamp of approval was required.[16]

As demonstrated by the Airline Deregulation Act of 1978 and the pending Trucking Deregulation Bill, Congress has finally begun to appreciate the cartel function of these regulatory agencies. The resulting lower fares and increased profits in the airline industry were what most economists expected from the deregulation of workably competitive markets.

### Economic Rationale for Health/Safety Regulation

Externality--A market transaction is complete when two parties exchange commodities on mutually agreed upon terms. Externalities arise if costs or benefits are imposed on third parties not included in the contract. The damage to one's health from breathing pollution from a factory or the contamination of streams, for example, is not included in the price of the final good. The polluter exploits resources as if they were free goods as long as injuries or "costs" are borne by the public at large. Economic efficiency, however, requires that prices reflect their true costs. If costs, like pollution, are not reflected in the prices of commodities, an inefficient allocation of resources results--more pollution is "produced" than under conditions where prices reflect true costs. Regulation is required to "internalize" the externality--make the market more efficient by incorporating the costs of health, safety, and environmental damage into the price of goods which generate such costs.

Underscoring the problem of externality, according to economists, is an inappropriate assignment of property rights. If the drinking water is contaminated, but the consumer has a property right for water of a specified quality, he or she can exact damages to the extent that the right has been violated. A portfolio of regulatory schemes for "internalizing the externality" has been suggested by economists including taxation, the sale of pollution rights, and direct charges and fines. These alternative forms of regulation are explored in a later chapter.

Quality--Internalizing the externality assures monetary compensation to the victim. For normal economic goods, like a stolen bicycle, dollar compensation is nearly as good as prevention. The victim can return to his original position by purchasing a new bike. It is as if he freely contracted for the exchange.

That health, safety, and environmental protection are qualitatively different from economic goods is not difficult to establish. The worker who contracts byssinosis in a textile mill has little use for jogging gear. The violinist who loses a finger to the lawnmower has not lost his or her "subjective valuation," as the economist terms it, for the musical instrument; playing has lost all practicality. Cameras lose their utility as smog engulfs the scenery, as does recreational equipment with the pollution of the air and streams. For the paraplegic who emerges from a car accident, for the DES daughter with vaginal cancer, for the asbestosis victim, indemnification in the form of dollar payment does not restore the victim to the original position. That person's "free choice" has become permanently supplanted with "dire needs" like medical care.

Health, safety, and environmental protection, in other words, are prerequisites for full appreciation and enjoyment of all "economic goods." Sacrificing them for short-term production is like using the walls of one's house for firewood on a wintry night. Preservation of such primary goods is an investment in the basic freedom of choice of economic goods, an essential component of the competitive market of economic theory.

Dynamic Effects--According to theory, each successive market exchange is a snapshot, entirely oblivious of the previous one. Health, safety, and environmental damage, however, unlike normal "commodities," are not so well behaved. Acting like falling dominoes, they tend to create dynamic effects which rebound on the market and distort it--distortions that tend to linger for years and reverberate for generations. Such was the case with thalidomide and DES.[17] Such is also the case with Love Canal, 32,000 other potential Love Canals, and the Kepone contamination of the James River by Allied Chemical Corporation.[18]

Responding to such gross costs, new industries blossom which produce compensatory rather than primary goods. Health care is the nation's largest, fastest growing, and one of the most inflationary "industries." It accounted for $12 billion in 1950, and $200 billion today.[19] It was four percent of GNP in 1950, and nine percent today.[20] These growing costs, in part, are the result of a deteriorating environment—60 to 90 percent of the 400,000 annual cancer cases are complicated by an environmental factor—and are expended not to produce wealth but to compensate for lost health.

The multi-billion dollar legal and insurance industries are also getting healthier as the condition of the nation's health and environment deteriorates. Product liability suits multiply and insurance premiums rise with unsafe products and an unhealthy environment. According to _Business Week_, liability insurance for manufacturers and retailers cost $2.75 billion in 1978.[20a] Should the burgeoning health care, legal, and insurance "industries" be conceptually equivalent to the electronics, steel, food, and auto industries? The more they boost GNP the better? Robert Stewart Smith, in an American Enterprise Institute publication, has argued that "the decision rule which should guide safety and health policy is...exactly the same as the one that is used to decide how many television sets and pounds of beef should be produced."[21]

But one would think that a poisoned James River is qualitatively different from a television set and that the dynamic effects of health and safety damage on the production process is not what economists have in mind when they talk about widgets. For example, the labor input deteriorates. Workers lost more than 250 million working hours in 1977 as a result of occupational injuries alone.[22] Such a loss translates into a $3.4 billion loss in output for that year.[23] Noise can contribute to decreased productivity. The effects of black lung disease reduce the productivity of labor in underground coal mining by %20 to 30%.[24] As the number of disabled workers grows (the disability program at social security presently costs $11 to $13 billion every year),[25] the pool of healthy applicants available for jobs declines. According to a study sponsored by the Department of Labor in 1978, 3 million of the 15 million people who had some kind of disability felt their job was the cause. Over a third were prevented from working at all because of their condition, while 9.5 million were constricted in the type of job that could be performed as a result of their disability.[26]

The capital input deteriorates. Sulfur oxides accelerate corrosion. Just with respect to metals, increased maintenance costs, preventive measures, and more frequent replacement because of air pollution cost $1.45 billion in 1970, according to one study.[27] Acid rain, 50% of which is caused by the noxious chemical sulphur dioxide spewed forth from U.S. coal-fired power plants, will be the death knell to all fish and plantlife in 48,000 lakes in Ontario, Canada in addition to 300 lakes in New York's Adirondack Mountains.[28] Architectural damage due to sulphur dioxide is placed at $12 billion every year.[29] Soiling and chemical deterioration to paint is estimated at $1.2 billion annually by Richard L. Salmon in a different study conducted in 1970.[30] Textile damage is placed at more than $2 billion every year from air pollution.[31] And vegetation losses ran over $200 million in 1970 for mobile source emissions alone, according to the National Academy of Sciences.[31a] Ponderosa Pine loss in the San Bernadino National Forest is as high as 83%.[32]

Unlike the market for products, the "market" for pollution prevention beforehand is morally and economically preferable to compensation later. Prevention of Love Canal would have run $4 million in 1979 dollars; so far, $23 million in tax revenues from the State of New York and $4 million from EPA have been funneled into cleanup.[33] Proper disposal of PCBs in Raleigh, North Carolina would have cost $100,000; proper cleanup could cost between $2 million and $12 million.[33a] The Environmental Protection Agency estimates that it would cost $8 billion to clean up the James River, but adds that it may be impossible to restore the River to its former state...at any cost. A $200,000 dollar investment by Allied Chemical could have put an end to the episode before the first toxic domino fell.[34]

Operating an economy according to a series of snapshots is like Achilles in Zeno's paradox who will never overtake the tortoise. Intricate analyses at every second could never predict the common sense outcome observed by one who understands the nature of interdependence between time and space. Abraham Ribicoff, for example, recently asked an audience in Pittsburgh what the capital base in that city would have been had it not been for environmental regulation. "What is the value of these buildings today compared to what they would have been? Pittsburgh has been saved because of some farsighted political action."[35] Whether it's Pittsburgh or Harrisburg, the costs of not regulating can be immense and often unmeasurable, as the next chapter discusses.

Imperfect Information--Economic efficiency requires informed choice. The nature of hazard and risks in the workplace, the marketplace, and the environment, however, defy well-informed choice. As Dr. Irving J. Selikoff of Mt. Sinai Medical School bluntly put it,

> We will not know for another twenty years whether
> the chemicals introduced in the 1960s are hazardous.
> We need better methods than we have now without
> waiting to see the dead bodies in the streets.[36]

One set of information required in the area of toxic substances is epidemiological--the risks to humans from different levels of dosage, the "dose-response curve." The complications that arise in testing the synthetic hormone, diethylstilbestrol (DES), a known carcinogen that is still injected into poultry, cattle, and sheep to promote growth, are not atypical. In one laboratory study, there was significant increase of breast tumor development over the control group for those exposed to DES at levels of 6.25 parts per billion (ppb) and above 50 ppb, while those receiving a dosage in between, 12.5 ppb and 25 ppb, did not exhibit significant departure from the controls.[37] Such results challenge the assumption of a threshold below which ingestion is safe; it also challenges the belief that greater exposure necessarily means greater risk, that dose and response are related in a smooth, continuous fashion. As one report noted, such is more the norm than the exception: "Clearly, what one finds through such research is not a threshold response but rather a threshold of observation."[38]

Information is also deficient when one tries to extrapolate animal data to humans. What allowance should be made in levels of susceptibility between the two? Time lags in the action of these substances have become their brutal trademark. It was impossible for the 500,000 to two million women given DES to prevent miscarriages--which it didn't do--[39] between 1945 and 1955, for example, to know that they were increasing their daughters' chances of developing vaginal or cervical cancer.[40] Information is surfacing today, more than thirty years later, of possible damage to the mother (increased chance of breast and gynecological cancer) and their sons ("an excess of abnormalities" in the genital and urinary tract).[41]

A different set of epidemiological data required for informed choice is difficult to test in the lab: the problem of interaction. Women exposed to DES, for example, should avoid any further exposure to estrogens because cancer-causing effects tend to accumulate.[42] Many interactions have synergistic rather than purely cumulative effects. For asbestos workers who smoke, lung cancer is 92 times more frequent than in the non-smoking population.[43] Amphetamines are ten times more toxic under noisy conditions than under normal stress.[44] Noise also reduces visual accuity and could be responsible for higher risk of industrial accident.[45] How is the consumer to know which products are made in noisy environments and therefore pose extra risks?

Risk identification is one matter; identification with risk is another. Well informed, rational choice requires consumers and workers to understand the risks they undertake. "It doesn't do any good to write on a menu that if you have bacon, you run a one times ten to the minus nine probability of getting cancer," says economist Allen Ferguson, head of the Public Interest Economics Center. "That just doesn't—ten to the minus nine—communicate an awful lot."[46] A recent survey showed that only eighteen percent of those interviewed felt that there was a one in ten liklihood of their being in an accident next year. Fifty percent felt that the probability was less than one in three hundred.[47] The actual probability? One in five.[48] To the economist, the solution is to provide more information. But, given the nature of the information, one wonders whether people will or can calculate the multiple probabilities of injury or death for the many products they buy daily. Consumers are not actuaries.

Free Choice and Collective Goods—Roger Noll recently noted that husband and wife often choose to take different plane flights so as to lower the risk of leaving their children parentless. But he continued, "there is no way for society to take individual airplanes. Each of us is not an independent event. We are all in this together."[49] Technology, in other words, has created an economy of collective goods and mass consumption.

Even with adequate information, no one alone can choose clean air in an urban environment. These choices are inherently collective.

Interdependence in production is even more pronounced. Technology has given rise to machinery and institutions which have whittled the sphere of choice of independent and isolated workers down to microscopic proportions. Employment itself has become a collective good. "[There are] many things the individual can't do," states Irving Selikoff. "The individual worker can protest, but he'll protest himself out of a job."[50] For example, four women at an American Cyanamid plant in West Virginia had themselves sterilized after the plant personnel director implied that it might help save their jobs. (Lead and other chemicals in the plant can be dangerous to unborn children.) "It was not a joint decision on our part," said Donna Martin, a 26 year old who was sterilized. "We made the decisions individually, and we did it because we were afraid."[51]

Free Choice and Institutions--Closely related to the problem of collective goods and free choice is the impact of various institutional arrangements on consumer choice and expectation. What John Kenneth Galbraith has termed "induced demand" is one such problem. Allen Ferguson aptly summed up the argument; "...there is a whole array of economic activities in the form of persuasion which undercut the basic premise of market economics by making the response of the consumer a function of the activity of the supplier."[52] Thus, based on the auto industry's advertising emphasis, consumers have been free to choose what kind of color, vinyl or style car they wanted--but not whether it has air bags or bumpers that survive 5 mph impacts... or light enough to get thirty miles to the gallon. "After more than a quarter-century of conditioning the American people to the notion that bigger is better," admits Thomas A. Stoude, marketing director for Chevrolet, "we had to persuade them within a year that in downsizing you get more, not less, for your money."[53]

Income class will play an important role in the lack of choice, not because the poor are ignorant, but because they cannot afford risk avoidance. Residents of Triana, Alabama, for instance, eat fish from the Tennessee River with levels of DDT fifty times the amount the Food and Drug Administration considers carcinogenic because they cannot afford anything else. According to authorities at TVA, the contamination of the river is caused by an Olin Corporation chemical plant.[54] Perhaps United Steelworker President Lloyd McBride was not far off the mark when he conjectured, "I think we'd find that the worker lives downstream and downwind from the manager."[55]

On the production end, market theory is limited because it rests on the premise of perfect mobility in the labor force and job availability along a wage-risk spectrum. If the worker knows the risks and is not happy with them, the assumption is that he can take lower pay somewhere else where the level of risk suits him.

The decision to leave a job because it is too hazardous, however, is not an isolated one. It may involve giving up pension rights, abandoning a home, leaving acquaintances, and relocating a family. Nor is the decision independant. As Nicholas Ashford, Assistant Director of the Center for Policy Alternatives at MIT, notes, "...many workers are socialized to accept the hazardous nature of certain jobs and are convinced of the necessity of performing them in order to earn their livelihood."[56]

If a wage-risk spectrum does exist, it is only among the poor. Studies show that the assumption of risk is higher for non-unionized than unionized jobs and among non-educated workers than educated workers.[57]

"A worker sells his wage off for his health cheaply if he does not have a large bundle of economic goods," states Ashford.[58] Logging, for example, is one of the riskiest occupations. Workers are subject to injury by falling limbs and trees. Chain saws are responsible for thousands of lacerations and amputations every year. A disease caused by gripping the saw over prolonged periods is called "Dead Man's Hands." The average earnings for the Maine woodsman? $6,500.[59] Trading off dollars for health is a farce to him since a decrease in income will mean the depletion of primary goods, goods required to maintain nutrition and health.

The existence of cheap foreign labor, of domestic unemployment, and corporate control of data all tend to reinforce Eula Bingham's assertion that the trade-off is not between risks and lower pay, but between a job with all of its attendant risks or no job at all.

> Even though you educate workers about the problems, then you cannot say to that worker, well, you know, those are the hazards. I believe the way it was put here was that workers can then decide whether the working conditions and remuneration levels are sufficient for them to accept the associated health risks. I don't think they are prepared to make that kind of decision because...they are poor people and they need a job.[60]

Consumers and workers are both often left uninformed because of corporate control of relevant data. When John O'Leary, the former deputy secretary of energy, was asked at a congressional hearing why DOE kept certain information on industry supplies secret, he replied, "The companies simply don't like the public peering over their shoulders."[61] Especially with the health, safety and environmental impacts of their products, companies are very reluctant to risk full disclosure. For one of many examples, the aluminum industry by court order prevented the Consumer Product Safety Commission, until recently, from disseminating information on hazardous aluminum wiring affecting millions of households.[62]

As for workers, hundreds of thousands will die or suffer debilitating disease because, according to court documents, Johns-Manville and Raybestos

Manhattan, two of the country's largest asbestos producers, decided to reap an extra $2 billion in profits rather than disclose industry tests demonstrating the carcinogenic dangers of that substance.[63] The company doctor in NL Industries in Beachgrove, Indiana treated workers with lead poisoning in a manner similar to the team doctor whose philosophy is inject now, pay later--or maybe not at all.

Chelation drugs--drugs to get lead out of the body--are supposed to be administered only in cases where there is a severe overdose of lead in the body. But workers at NL, without being advised to their condition or side-effects of treatment, and without being given the opportunity to refuse such treatment, were administered chelation drugs for prophylactic reasons rather than overdose--an improper, illegal, and dangerous procedure. While OSHA leveled its largest fine ever on this corporation for concealing relevant medical data, it is not clear that $155,000 covers the damage which such willful activity by this conglomerate has inflicted on the workers involved.

### Political Rationale for Health/Safety Regulation

The political theories that have gained acceptance in the performance of "cartel" regulation do not jibe well with the thrust of health, safety, and environmental regulation. "With environmental or safety regulation, who are the 'special interests'?", asks Nicholas Ashford. "The answer is eighty million workers, one hundred fifty million consumers and the countless victims of toxic substances pollution. Isn't the question rather strange in this context?"[64]

Perhaps the most widely publicized political-economic theory to address the unique quality of health, safety, and environmental regulation is the "class conflict" model of Irving Kristol of the American Enterprise Institute and Paul Weaver, a former editor of Fortune.[65] Kristol and Weaver assert that the movement for the "new" health, safety, and environmental regulation has come from a leftist "class" that wishes to subvert the market in favor of its peculiar preferences:

> I have in mind the people--the "New Class" as they have come to be called--who do not,on balance, like a free, commercial society: that is, a society shaped by voluntary commercial transaction among consenting adults, in short, one whose central economic institution is the marketplace. They sincerely believe that a powerful government, in which they have positions of authority, can order things better. If one designates them, in a shorthand way, as "Naderites," one would not be far off the mark.[66]

A new iron triangle has developed, states Weaver, between the legislator, the press, and the public interest advocates. They all band together to preempt the market.

Conceptually, the "new class" rationale ignores the thrust of the public interest movement--to restore competition where feasible and to supplement the market by consumer and environmental standards where competition has failed to control externalities. As previously discussed, a free market based on free choice of "consenting adults" is a whim without certain health, safety, and environmental guarantees for its citizens. The worth of one's freedom to contract within the market depends on one's freedom from occupational injury and disease, environmental dangers, and product hazards. The "class conflict" theory fixates on the freedom to contract or choose and neglects the freedom from disease, injury and deception.

Nor does the class conflict theory sit well with historical fact. As Roger Noll stated, "the 'new' regulation is not really 'new'."[67] The Food and Drug Administration has evolved in three stages--beginning with the Pure Food and Drug Act of 1906. The Consumer Product Safety Commission is largely an amalgam of legislation dating back to June 30, 1953 when the Flammable Fabrics Act was passed. OSHA adopted safety standards which had already been formulated by the American National Standards Institute and other private, as well as public, organizations. .

Politically, one wonders how a new class of activists, intellectuals and journalists were able to prevail over a trillion dollar *Fortune* 500 who own the media and dominate political giving and lobbying.[68] It may have something to do with the quality of their competing arguments and the real-world problems that the "new" regulations sought to correct. Congressional action came as a reaction, generally to widespread disaster or narrowly averted disaster. Congress realized that self-regulation too often left Americans in the position of the *100,000,000 Guinea Pigs* described in Arthur Kallet's and F.J. Schlink's 1930's documentary by the same name.[69]

Public indignation over the adulteration of food led to an unprecedented decrease in meat consumption by 25% in 1906, the year of the Food and Drug Act's passage.[70] The horrors of elixir sulfanilamide in 1938 and the thalidomide tragedy in the early sixties brought a legislative response in 1938 and 1962, respectively. A continued increase during the sixties of accidents and injuries in the workplace and with consumer products led to the creation of the Consumer Product Safety Commission, the Occupational Safety and Health Administration, and the National Highway Traffic Safety Administration with special jurisdiction over automobiles. The explosion of toxic substances in the environment--71,000 in all, 23,000 in the workplace[71]--has created a sense of urgency over their regulation by OSHA and EPA. Charles Schultze and Allen V. Kneese, in *Pollution, Prices, and Public Policy*, concur that what was sought was a new regulatory approach, not, new regulation; "...by the end of the 1960's many persons interested in water quality were deeply disappointed and felt a need for something new. This feeling was fueled by the great upsurge of environmentalism and by several public and private reports severely critical of the old approach."[72]

It might be flattering, as conservative theologians would indeed argue, to believe that these agencies were wholly the result of Ralph Nader and some journalistic allies. But their creation was inspired by fundamental and unblinkable defects in the capitalist market economy. They were the direct result of a market system that simply failed to protect consumers--the tautologies of laissez-faire economists not withstanding--and of a government that responded to pressures of large victimized groups--workers and consumers--to promote the health and safety of its citizens.

## II. THE TROUBLE WITH COST-BENEFIT ANALYSIS

> Measuring all benefits and costs to whomever they may accrue is not only beyond the present ability of economic science, but presents conceptual difficulties which by their very nature can never be overcome except by making very specific assumptions...
>
> --Otto Eckstein[73]

Cost-benefit analysis is the rational decision tool of the economist. If the monetary gains expected from a project are less than the costs of undertaking it, that project fails the cost-benefit test and should be dropped. But given the limitations of the market in allocating health, safety, and environmental protection, as described above, it is not surprising that the slide rule of the market--cost-benefit analysis--is inadequate for appraising health, safety and environmental regulation. The conceptual difficulties encountered with discount rates, data, and values cited by Eckstein are only compounded by the tool's inability to address quality, its dependence often on self-serving and exaggerated numbers, its difficulty with quanitification of benefits, its impotence in the face of dynamic effects, and its indifference to distributional impacts. "When one adds to the equation the more nebulous effects of adverse health effects...or the often heard but seldom defined concept of the 'quality of life', then the entire methodology must necessarily fail," concluded Burke K. Zimmerman, scientist for the House Subcommittee on Health and the Environment.[74]

Studies by the Library of Congress, House Oversight and Investigations Committee, Senate Governmental Affairs Committee and Council on Environmental Quality have all concluded that the formal, mathematical cost-benefit analysis cannot adequately judge whether health/safety regulation is warranted or not.[75] Indeed, even *Business Week*, no consumer group house organ, has editorialized that "no cost-benefit study will arrive at a result on which all experts agree because it is difficult to measure benefits to the public of...government programs."[76]

Despite professional skepticism over its application, however, cost-benefit analysis, like the light from a extinct universe, continues to illuminate and excite critics of regulation. "The key action we need," stated regulation critic Murray Weidenbaum at a congressional hearing, "is for Congress to pass a law limiting new regulations to those instances where the total benefits to society exceed the costs."[77] Its continued vitality as a basis of the attack on health/safety regulation justifies a close look at its theory, basis, and use.

The Perfect Model and Non-neutrality

As with "truth in lending" or "pro-life," cost-benefit analysis seems to be a phrase, if not a concept, with irresistable appeal. Who could take issue with the idea of weighing costs and benefits?

On a recent first-year undergraduate economics exam at the University of Maryland, the economist's paradise was set forth in one of the questions:

> "V. A rubber plant is presently emitting 25 grams of sulphur dioxide into the air daily. Our best estimate of the medical effects is that three people become sick for each gram of pollution and that it costs $50 to treat each patient. The cost to the firm is as follows:

| Amount of Reduction | Total Cost of Reducing Pollution by this Amount | Cost of Removing That Unit |
|---|---|---|
| 1st unit | $40 | $40 |
| 2nd unit | $100 | $60 |
| 3rd unit | $200 | $100 |
| 4th unit | $400 | $200 |
| 5th unit | $750 | $350 |

What is the optimal amount of pollution from society's view?[78]

The astute student will realize that the damage to society for each gram of pollution is $150, the cost of treatment for three people.

The firm should eliminate "units" until its incremental cost of abatement from avoided medical treatment in the 3rd column exceeds $150, the incremental benefit or savings. This situation occurs after the third unit is removed, as the removal of the fourth costs $200, or $50 more than the corresponding benefit. Beyond three grams, society would prefer the firm to indemnify victims since that becomes the least costly way of "internalizing the externality."

As if by magic, all the problems of measurement are solved. On the cost side, the firm can choose between explicit technologies for the removal of each increment of waste, from no abatement to full elimination. Given these preconditions, the cost of abatement in this model follows a smooth curve of increasing costs.

On the benefit side, the "dose-response" curve is well known. Because cost-benefit analysis cannot place a value on unknown risk, compound uncertainties are non-existent in the perfect model. There is perfect knowledge about the level of actual exposure for everyone in the community. Everyone that is injured will require $50 in treatment. Unlike noise, lead, cotton dust, or asbestos, there are no cumulative or synergistic effects. Pollution does not build up over time as with the decay of the ozone layer, the seepage of waste from a chemical dump, or the creation of nuclear waste; nor does it vary with the weather and location. If time lags exist, all of the associated future costs are known and discounted to their present value of $50.

All of the traditional economic problems are solved. The externality, internalized; costs and benefits, balanced. Optimal. Efficient. And about as accurate a description of the real world as the Penn Central's optimistic annual report the year of its collapse.

Cost-benefit analysis, in its practice, cannot grapple with institutional pressures or distortions of costs and benefits. One hopes that the rubber industry and the health industry, for example, do not have monopoly power.

For C-B analysis assumes that prices are competitive, and are therefore accurate indices of consumer satisfaction. Assumed away is the industry's ability to create demand--which is, for example, the goal of the $5000 spent per physician per year on drug advertising.[79] Again, since such institutional realities are not taken into account, economists equate the level of consumer purchases with consumer satisfaction.

Is the rubber industry the source for data on compliance cost? One hopes that it is more reliable than the compliance estimates of several other industries:

- o Beryllium is a metal used in the production of nuclear weaponry, and OSHA has proposed a standard to control the dust and fumes created in its processing, which poses a cancer threat for more than 25,000 workers.[80] Relying strictly on the $150 million cost of compliance estimate from industry, former Energy Secretary James R. Schlesinger maintained that the standard was a potential threat to national security because it would allegedly shut down plants.[81] Less than three weeks after Schlesinger wrote to Secretary of Labor Ray Marshall warning of the security threat, Energy Department officials conceded that the industry estimate was "a gross estimate based on rule of thumb." Actual cost? Between $3.7 and $4.6 million.[82]
- o In the early 1970's the chemical industry estimated its compliance cost with the proposed vinyl chloride standard at 200 fold what it turred out to be.* When members of Congress requested the raw data, they were told that it had been destroyed according to a prior agreement among the participating firms.[82a]

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*For a fuller discussion of this example see p. 54.

- The Securities and Exchange Commission found that the U.S. Steel Corporation kept two sets of data on compliance costs with environmental standards: one for investors and another higher one for the media and the public.[83]
- The American Petroleum Institute (API) recently pegged the costs of complying with environmental regulations on oil and gas drilling at $45.5 billion per year, a cost which prompted a Wall Street Journal editorial entitled "EPA Runs Amuck."[84] The API estimate, however, was based on implementation of a an elaborate monitoring system, one which was not included in the proposed regulation, but which comprised over 98% of the estimate.[85] According to then Assistant Administrator for Water and Waste Management at EPA, Thomas C. Jorling, API knew that the cost estimate was "patently untrue." Furthermore, he states, "there is substantial double counting here since several proposed EPA requirements are already required by existing regulations in some states and on federal lands.[86]
- In a May 29, 1974 letter to the U.S. General Accounting Office, Volvo, the Swedish automaker, noted that most of the data released by U.S. automobile manufacturers on the cost of meeting federal regulations was based and "aimed purely at resisting regulation."[86a] Using price information supplied by auto companies, the Bureau of Labor Statistics compiled data on auto price increases attributed to safety standards. How much "price" data diverges from "cost" of compliance data is illustrated by information supplied to BLS on the price of shoulder harnesses. Industry attributed a $25 increase in the price of a 1968 model year car to the shoulder harness. Through a private investigation conducted by then Senator Walter Mondale and Senator Magnuson, however, it was revealed that cost of compliance for the auto manufacturers was less than $5 per car. In other words, industry reaped every year an extra $100 million in profit disguised as the cost of the safety device.[87]
- The Upholstered Furniture Council, a trade association for furniture manufacturers, has assessed the cost of compliance with a flammability

standard for furniture at $1 billion a year for twenty years. And their trade brochure, "Hanging Together," cogently sums up the entire thrust of corporate strategy in reporting costs. "If the Consumer Product Safety Commission mandates government regulation, the effect upon our industry will be incredibly costly and burdensome."[88] The CPSC pegs total compliance for the furniture group at $57-87 million, a cost increase that is commensurate with the results of California's furniture flammability standard, the only one in existence in the United States.[89]

o In response to a query from Ralph Nader, a garment manufacturer estimated that flame-retardant pajamas would retail for $1.70 more than regular pajamas. When it later provided actual cost data, the manufacturer revealed that the differential was less than one-third of its initial estimate.[90]

It is small wonder that the Moss Subcommittee concluded that "The most significant factor in evaluating a benefit-cost study is the name of the sponsor."[91]

Cost-benefit analysts often assume away any "learning curve," where the cost of pollution control and safety goes down as engineers gain experience with new methods and as the standard becomes part of the normal production process. And once regulations became designed into the production process rather than just a departure from a competitive market, as cost-benefit analysis assumes, their true impact on the economy becomes next to impossible to isolate. Regulation, for instance, has fueled the growth of the pollution device and chemical industries, whose investments, in turn, have become vital links in the circular flow of goods and services in the economy.

All of the limits of the market, in other words, become the biases of cost-benefit analysis, biases which invariably lead to an overstatement of costs and an underestimation of benefits.

## The Problem of Measurement--Costs

It is often said that costs are easier to measure than benefits, but the accuracy of even that contention rests on how "cost" is defined. It is helpful to differentiate between six concepts of cost, often used interchangeably, before delving into analysis of specific studies:

(1) Gross Costs to Industry: What private industry spends on health, safety and environmental protection.

(2) Gross Costs to Society: The total economic expenditure by society (industry, government and consumers) on health, safety and environmental protection.

(3) Net Costs to Industry: (1) minus cost reductions and tax write-offs. resulting from installation of new equipment and processes.

(4) Net Costs to Society: (2) minus all benefits.

(5) Incremental Costs: Firms would take some precautionary measures regarding health, safety, and the environment on their own initiative. Incremental costs are those due solely to regulation--beyond what firms would do in any case.

(6) Net Incremental Costs: (5) minus all incremental benefits.

The true economic cost of regulation is (6). Professor Murray Weidenbaum's study, "The Costs of Government Regulation of Business," however, uses (1) in some areas (particularly in the health/safety area), a combination of (1) and (5) in others, while in still other instances (4) alone. His study is analyzed first. The Business Roundtable study, which combines concepts (3)[92] and (5), is then discussed.

## A. Weidenbaum Estimate [93]

> You know...people think I'm in my second childhood. When they walk into my office what do they see? Tables, charts, statistics? Nooo, I've got my walls lined with comic strips. All say the same thing; "Government is overregulating." Now this is a very important phenomenon. When it begins....to be the topic of humor, then you know this thing is getting big. (Murray Weidenbaum, to business audience at Shoreham Americana, November, 1978)

Murray Weidenbaum is a former Assistant Secretary of the Treasury under Richard Nixon, and is currently working at the American Enterprise Insitute, on sabbatical from Washington University, where he teaches and directs the Center for the Study of American Business. His $102.7 billion figure for the cost of regulation in 1979 is derived from his 1976 calculation of a $66.1 billion cost figure. That figure represents a summation of the "administrative costs" (budgets) of the regulatory agencies ($3.2 billion) and the supposed industry "compliance costs" ($62.9 billion). Because his study is probably the most widely cited estimate of the costs of regulation, invoked uncritically by nearly all critics of regulation, a close examination of how he arrives at his estimate is warranted.

Clearly the way Weidenbaum, and all those who recite him, get into the stratosphere of the hundred billion dollar range is by use of his multiplier of 20. Weidenbaum arrives at his multiplier by dividing the compliance costs above, as determined by several studies, including one on federal paperwork, by the administrative costs.[94] Applying this to the perspective $4.8 billion budget for 1979, Weidenbaum projects a $97.9 billion cost of compliance in 1979. (That 20 X $4.8 is not $97.9 billion, but $96 billion is explained by the fact that Mr. Weidenbaum chooses to round off numbers in some instances and not in others.) Adding the $4.8 billion in administrative costs yields a total of $102.7 billion.

Weidenbaum's only justification for the use of his multiplier is hardly a justification at all. "Although there is no assurance that larger budgets for Federal regulatory agencies generate a constant multiplier effect on the private sector," he admits, "the data used here for private sector regulatory costs are substantially underestimated."[95]

The multiplier actually represents a weighted average of all the multipliers associated with individual agencies and specific activities for which Weidenbaum found "compliance costs." Different studies, for example, indicated that the Interstate Commerce Commission has a multiplier of 200; International Trade Commission, 425; Civil Aeronautics Board, 30; Environmental Protection Agency, 12).[96] But some of the agencies and activities used by Weidenbaum have no corresponding "compliance cost" estimates and therefore no multiplier. Yet, they are all used to arrive at the final multiplier of 20 — which effectively means that the ITC, with an asserted 425:1 multiplier, influences the multiplier of the Coast Guard and Consumer Product Safety Commission (CPSC), agencies that hardly relate to the ITC. Since the $25 billion estimate for paperwork is also crucial to the calculation of the multiplier,Weidenbaum assumes that every new budget dollar—whether it goes to the the IRS or Occupational Safety and Health Administration (OSHA)—will generate a proportionate amount in new paperwork. Finally, even if there was a constant agency multiplier (for which there is no evidence), the aggregate multiplier would not hold at 20 in 1979, as Weidenbaum assumes; the 1979 budget would also have to be distributed among the agencies in the same proportions as they were in 1976. Weidenbaum himself stresses that these proportions are changing.[97] It was just such an imaginative methodology that was called "a dubious rationale for a questionable procedure" by a major Congressional Research Service analysis of regulatory cost studies in late 1978.[98]

Compliance Costs—Weidenbaum's $62.9 billion figure for compliance is a conglomeration of "cartel" regulatory costs ($21.0 billion), health/safety regulatory costs ($16.9 billion) and the "paperwork burden" ($25.0 billion). Different concepts of "cost" are used intermittently. Most estimates are based on individual studies performed years ago and adjusted for inflation to the 1976 account, which has in turn been the basis of all his more current and higher estimates.

As the CRS study observed of Weidenbaum, "....the use of the term 'compliance cost' is misleading, in that it is used by the author sometimes to refer to aggregate social costs, but elsewhere to be limited more strictly to the individual firm subject to regulations."[99] For example, his study nowhere attempts to assess the benefits of auto, environmental or workplace regulation—so his cost estimates in these areas are gross costs, not net costs. Yet he uses studies in assessing FDA* and milk marketing regulation by the Department of Agriculture which attempt to assess the net social costs of regulation. As a result, Weidenbaum's estimate for the cost of health/safety regulation is a hodgepodge of incommensurable figures.

The $430 estimate for cost per car to the consumers for safety standards mandated by the National Highway Traffic Safety Administration represents a microcosm of the problems encountered in the larger study. By using Bureau of Labor Statistics data in a manner never intended, according to BLS officials, Weidenbaum indiscriminately sums numbers that cannot be summed.[100]

He double counts the price of new bumpers because BLS has a figure on the initial price change for bumpers during each of the two phases of the standard. The second phase bumper is an entirely different one than the first and is the only one that consumers pay for when they purchase new cars. No one can purchase a second phase attachment to convert their 1973 bumpers into 1975 bumpers; yet, Weidenbaum, in summing both figures, implies that this is the way the new bumpers are made.[101] In fact, experience with different materials has led to a less expensive way of meeting that standard than when originally recorded by BLS. Weidenbaum ignores this "learning curve" in all his estimates.

Contrary to Weidenbaum, NHTSA found that the actual gross cost per car for auto safety regulation was closer to $250, not $430 per car.[102] In addition, Weidenbaum never counter-balances his asserted costs with the benefits

*Weidenbaum's figure for FDA relies heavily on Sam Peltzman's study, critiqued on pp. 114-120 in this report.

of safety, emissions and fuel efficiency regulation—estimated at $1500 per car by 1985—[103] or mention the savings of 100,000 lives in the past 14 years from federal auto and highway regulation.*[104]

With respect to workplace and environmental protection, Weidenbaum selects cost data from the McGraw Hill survey and the Council on Environmental Quality, respectively. How easily gross costs can be mistaken for incremental costs is demonstrated by this exchange between Professor Weidenbaum and Richard Bergman, executive director of Government Interagency Task Force on Workplace Safety and Health:

> Weidenbaum: I have no difficulty in cost/benefit analysis with respect to OSHA....There has been no improvement, while McGraw Hill estimates outlays of $3.5 billion per year.
>
> Bergman: I think you're being a little unfair there. The McGraw Hill Survey showed that industry was spending that level for workplace safety *before* OSHA.[105]

The Business Roundtable study was more careful in isolating incremental costs. Their $184 million figure of annual incremental costs for OSHA is consistent with the results of an exercise performed by David R. Bell in the Office of Accounting Analysis at OSHA. Bell found that, after adjusting for inflation, businesses estimated that their expenditures during 1978 were only 11%—$275 million—greater than during 1972. Still, the percentage of this figure attributable to OSHA regulation is left undetermined.[106]

Weidenbaum's contention that no benefits have come out of OSHA regulation is also wrong. John Mendeloff and Robert Stewart Smith conducted studies, discussed in detail subsequently, which find that once data is disaggregated industry by industry, which Weidenbaum neglects to do, OSHA has had a positive impact on workplace safety.[107]

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*For a further discussion of Weidenbaum's auto estimate, see pp. 102-104.

Paperwork--Over one-third of Weidenbaum's figure is for paperwork. The bulk of this $25 billion figure, determined by the specially appointed Commission on Federal Paperwork in 1977, is comprised of such questionable categories as IRS forms and census and related forms, which may well be burdensome but is not classically "regulatory" in purpose, and forms for government contracts, subsidies and loans, which companies presumably fill out without undue arm-twisting or grumbling.

A November 17, 1978 GAO report, "Federal Paperwork: Its Impact on American Businesses" puts the Weidenbaum estimate into proper perspective. The report estimates a total $1 billion burden for those federal programs which GAO and OMB monitor. This represents 22% of the entire burden of federal paperwork, according to the report, while IRS comprises the bulk of the $4 billion remainder.[108] In addition, of this $1 billion estimate, more than 50% is due to cartel regulation. Health, safety, and environmental regulation make up less than 10%, or less than one half of one percent of Weidenbaum's figure.

In conclusion, the Weidenbaum study is shot through with methodological errors, combines incommensurate numbers, and rhetorically attacks consumer and environmental regulation when more than two-thirds of its total is attributable to cartel regulation and paperwork. In addition, his center gets extensive funding from business grants. So he gets financial support from the business community which in turn provides an eager market for his studies that attack government regulation of business. This is surely not illegal, but neither is it independent research.*

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*Based on financial reports at Washington University, the following business-related individuals or institutions were among those contributing

B. Business Roundtable

The purpose of the Roundtable study, conducted by the accounting firm Arthur Andersen, Inc., was to estimate the cost of compliance with regulations set by Environmental Protection Administration (EPA), Occupational Safety and Health Administration (OSHA), Equal Employment Opportunity (EEO), Department of Energy (DOE), Employee Retirement Income Security Act (ERISA), and Federal Trade Commission (FTC) in 1977. The sample included forty-eight members of the Business Roundtable, subdivided into industrial sectors at the two-digit level of the standard industrial code. In measuring "incremental costs," Andersen purports to include only what businesses spent above and beyond what would have transpired had there been no regulation. This approach is surely preferable to the Weidenbaum method of toting up non-comparable cost and price figures. But calculating costs as if there were no regulation is more difficult in fact than in theory.

Anderson claims that they are not just taking management's word for what would have occurred without regulation, but instead are assessing "all other factors (i.e. social pressures, demands of the marketplace, etc.) which were present at the time of the decision to take action."[109] How were social

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to the Center in either fiscal year 1976 or 1977: James S. McDonnell, Jr., the Chairman of the McDonnell-Douglas Corp., $327,000; Olin Foundation, $316,000; J. Howard Pew Freedom Trust (Pew was the founder of Sun Oil Co.), $25,000; General Electric, $10,000; Corning Glass Works Foundation, $5,000.

pressures determined? And who made this assessment? Consumer groups and labor unions were not polled as to what they would have done had regulation not been mandated. It is assumed that "social pressures" would have reacted to the corporation's alternative as they did to the standard. Yet, when Ford Motor executives met with Nixon in 1971 and cajoled him into substituting the buzzer-interlock system for passive restraints, it was the harsh reaction from consumers which led to its removal in 1974. No study of regulation, however, leaves the interlock episode out of the cost of government regulation. Corporate bungling led to costs of introduction and removal, and delayed the passive restraint system another decade. Those kinds of extra costs are not subtracted by Anderson from its regulatory estimates.

In other words, regulation is a process, not just a final standard. Separating corporate involvement from that process--the cost that is added because of corporate resistance--is like separating broken yolks from egg whites: a well-defined, but hopeless endeavor. So Anderson routinely adds the millions of dollars of legal fees and consulting fees for corporate avoidance, noncompliance, and delay to the cost of regulation.[110]

The measurement of benefits is excluded from the study, which assumes that costs would have remained the same without regulation or with the corporate alternative. But, health, safety and environmental damage has a way of slowly festering so that costs of neglect remain hidden and accumulate until they reach critical proportions.

If proper disposal of toxic wastes was mandated twenty-five years ago, before Hooker Chemical began dumping chemicals into Love Canal, the incremental cost would have been the installation of the disposal system. In retrospect, such a disposal system would have resulted in current cost reductions of millions of dollars. But such current savings from regulations mandated years ago never figure into the Anderson study because cost-benefit analysis cannot identify the costs of not regulating.

Not only does Anderson underestimate cost reductions realized today from earlier regulation, it over-estimates the current cost of capital, which would actually be expended in the future. The incremental "capital" costs for these 48 companies was set at $870 million for 1977, and the report stresses that capital costs incurred for these projects were $1.6 billion before 1977 and were expected to cost another $1.4 billion before they were completed.[111] Capital is an input into the production process whose cost is realized in final goods. The true cost of capital, then, is the amount it depreciates every year—how much of the input has been used up in final goods. It is a curious method of calculating capital costs to appraise how much is spent on capital equipment rather than the amount that it depreciates during the year--the true cost. Yet this is what Anderson does. As American Enterprise Institute's Regulation magazine notes, the conventional measure of capital costs "would be a more ambitious undertaking, but the resulting estimates would correspond more closely in concept to conventional measures of annual production and costs..."[111a]

The Roundtable report also excludes the benefits in the form of increased revenues and sales because of regulation. "The cost reductions referred to here do not include benefits from the existence of regulation, such as revenues from new products created by the necessity for customers [Industry] with regulations, investment tax credits or other income tax benefits."[112] Thus, the entire pollution device industry and other industries which have thrived as a result of, and absorbed the costs of, regulation are excluded. While the net revenue from these products and tax write-offs from investing in them are not included, the costs arising from the discontinuance of more dangerous substitutes are tabulated.[113]

Finally, Anderson counts the costs of developing alternative products or modifying existing products. Part of the benefit of the 1962 drug amendments was to shift the emphasis of research and development from trivial modifications that assured the renewal of patents of new drugs to therapeutic breakthroughs.[114] There is no consideration of quality changes in new products in the $96 million which Roundtable attributes to drug research and technology.

Two billion dollars, or 77% of the total $2.6 billion in incremental regulatory costs uncovered by the Roundtable, is attributed to the Environmental Protection Agency. Two standards alone, Motor Vehicle Emission and National Ambient Air Quality, made up $900 million, or about 35% of the study's entire estimated conclusion. One study determined that the possible health benefits alone of a 60% reduction of certain air pollutants would be as high as $40.9 billion annually.[115] Another study has estimated, conservatively, that EPA regulation has produced 23.3 billion in annual benefits, mostly from air pollution control.[116]

In other words, $2 billion may be a small price to pay when benefits are placed next to the costs--which the Roundtable study does not do. When asked why the study omitted considerations of benefits, Frank T. Cary, Chairman of IBM and head of the Roundtable's regulatory task force, stated, "many of us felt that the costs of regulation have become excessive, not just in total but specific regulations, not just direct costs but secondary effects."[117]

OSHA was the only other health/safety agency that was included in the study. With respect to OSHA's "relatively low" incremental costs, Anderson states:

> The relatively low incremental costs attributable to OSHA in 1977 are explained by the fact that many OSHA regulations which were based on national consensus standards were implemented in the early 1970s. The heaviest expenditures were therefore incurred before 1977.[118]

There is every reason to believe that OSHA's experience will carry over to the other agencies. As Eula Bingham recently noted, the health and safety agencies have to catch up for years of neglect in addition to confronting new hazards.[119] The policy of the agencies, appropriately, has generally been to address the worst problems first. So once the initial outlays are made for pollution control equipment, ventilation systems, and other technologies which eliminate potential as well as current hazards, especially in the area of toxic substances and chemicals, new capital investment for health, safety, and environmental protection will most likely decline. Yet the Roundtable study, like most cost analyses, does not acknowledge that EPA or OSHA are in their most demanding stages.

As troubling is the way the Business Roundtable's accompanying report tends to distort rather than to do justice to their data. It claimed that the $2.6 billion was fully 16% of the firms' $16.6 billion profit;[120] unfortunately, this compares a pre-tax figure ($2.6 billion) with a post-tax figure ($16.6 billion).[121] Arthur Andersen concedes that it would have been proper to express all figures in either pre-tax or post-tax form. Jerry Walker, partner at Arthur Andersen, told one of the authors, "We did not have the statistical base to express the net income figures in pre-tax dollars."[121] Why the fixation on net income? A more accurate comparison is that the $2.6 billion in costs for the 38 manufacturing firms was less than 1% of their $280 billion in gross income. Finally, the report stresses that only 48 firms and six agencies were studied; the $2.6 billion figure is "just the tip of the iceberg" and therefore not incompatible with Weidenbaum's mammoth sum.[122]

Yet 38 of these 48 companies represent over 13% of the assets of Fortune's top 500, or more than 29% of the assets of the manufacturing sector of the economy.[123]

Going further, the six agencies were selected precisely because they were

were thought to have the *largest* impact on industry of all regulatory activity. Discussions with companies prior to data collection indicated that three to five agencies represented more than 75% of each company's regulatory costs. When the companies were asked which six agencies had the greatest cost impact on them, EPA was included on 66% of the returns, OSHA on 63% of the returns, and EEOC on 73%. When ranked according to industry rather than company, DOE led the list for its frequency cited among the top six.[124] Considering these facts, the Roundtable Study impeaches the Weidenbaum figure.*

## *The Problem of Measurement—Benefits*

To be complete benefit measurement must be able to appraise both the value of life and property. Valuation of life includes the aversion of injury, disease, as well as fatality. Property valuation requires an appraisal of aesthetic "goods" in addition to physical property damage. What is the value of being able to see clear across the Grand Canyon? How much is a life "worth"? Guido Calabresi and Philip Bobbitt contend that such benefits are more often intangible than measurable:

> Attempts to weigh precisely the social costs and benefits associated with different responses to a tragic choice result more often in the valuation of only what we can measure than in the measurement of all that we value. Costs which are difficult to measure, such as the affront to the value of human life entailed by a decision to authorize medical experimentation with the terminally ill, will often be left out of the accounting altogether, though the resulting wrongness of the premises will poison the conclusion.[125]

Many economists, on the other hand, maintain that any life-saving policy, since it absorbs scarce resources all of which have a price, implicitly places a value on life. How else, they ask, is society to make the tragic choice between different life-saving projects? Better to state valuations outright than to do it tacitly, states Robert Crandall, Brookings economist and acting director of the Council on Wage Price Stability under President Ford.. "Cost-benefit analysis brings fear into the heart of regulators...they do it [illegible] dollars

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*The Roundtable study is not the first to disparage the Weidenbaum figure. A September, 1979 GAO analysis of an OMB study on regulation implied a $11.0-$38.8 billion cost of federal *as well as* state and local regulation, a far cry from $102 billion.[124a]

for lives) but don't admit it."[126]

But asserting that regulators make life-saving decisions on the basis of cost-benefit analysis is like saying that medals are awarded to the marathon runner in the Olympics with the strongest muscles; they may be one factor found in every winner--an important one--but may not be as important as the stamina and character of the athlete--things not easily quantified. "No single criterion has a necessary presumption of dominance," states John Mendeloff, "and thus the least-cost solution will not necessarily be the most desirable. For example, procedural fairness and distributional equity must always be considered as well." [127]

Whether muscles should decide races is a different issue. J.G.U. Adams takes pains to distinguish the abhorred valuations placed on life in Jonathan Swift's "Modest Proposal" from the Willingness to Pay (WTP) method of life valuation, explored later in this section.[*] As long as there are identifiable groups that absorb risks or reap benefits--as with the Irish peasant and the English gentry respectively in Swift's account--then measuring benefits is an immoral practice, states Adams. [128] But when risk is randomly distributed and life is just "statistical" life, the valuation of risk is neutral and becomes just an exercise in rationality and efficiency. Realizing that society may be likened enough to Swift's to disqualify the WTP approach, Adams suggests that a "veil of ignorance" be suspended over the population--information withheld--so that the rational tool can be saved. "We must not relent....We must not be deterred by the softhearted among us who prefer not to think of death and disablement in terms of money. Rationality and efficiency demand that we reduce everything to cash."[129] Others prefer to deal with the "unquieting" truth. Says Calabresi, "The willingness of a poor man, confronting a tragic situation, to choose money rather than the tragically scarce resource (risk aversion) always represents an unquiet indictment of society's distribution of wealth."[130]

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[*] The "Proposal" suggested that children of Irish peasants be prepared and and served as food to English aristocrats as a solution to the poverty problem.

This section addresses two methods of benefit measurement: the discounted future earnings approach (DFE) and the willingness to pay approach (WTP). It should be noted at the outset that each type of benefit measurement requires three sets of hard-to-get data. The dose-response curve must be known.* Data on actual exposure must be available. And comparative effectiveness of pollution abatement techniques must be fully documented. Some of the problems in gathering such data were discussed earlier.

1. Discounted Future Earnings

The discounted future earnings approach places a value on life based on a computation of society's valuation of a person's labor: the wage. Lifetime earnings lost from early death serves as the index for the individual's worth. Moreover, future earnings are discounted at a predetermined rate to reflect the economic assumption that also underpins the interest rate--a dollar now is worth more than a dollar in the future.

Other "costs" are often added on to the DFE base to reflect the diversion of other resources. The National Highway Traffic Safety Administration's $359,000 value for "societal loss" per fatality includes, in addition to discounted future earnings, losses to family and community, cost of production

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*Lagged response must also figure into the computations of dose-response, but are neglected in many careful studies, as seen by this exchange between Nicholas Ashford and Ralph D'Arge, a professor and research director at the University of Wyoming at a conference sponsored by Public Interest Economics Foundation in September, 1978.

Ashford: In trying to correlate the level of air pollution with bronchitis, at what point in time did you choose to measure the air pollution level, and what point in time did you choose to measure the disease incidence? Were those the same periods of time?

D'Arge: Yes.

Continued next page

of co-workers, consumption losses, medical expenditures, funeral expenses, and legal fees. Similarly, the benefit of averted injury is calculated as the present value of lost earnings plus the cost of treatment. Since treatment can be extremely expensive, an auto accident which kills a seriously handicapped child, in this methodology, may produce a net benefit to society.

Because valuation of life by the average wage earner excludes executive salaries and income from wealth, the results are biased downward. The lives of those who can expect no future income, like the severely handicapped or the elderly, are valued at next to nothing. One DFE index placed the value of an 85 year old black woman at $123.[131]

The policy implications in a world of scarce resources allocated by a DFE analysis are obviously troubling. Save the rich man before the poor man, the unionized before the non-unionized, the white man before the black woman--indeed, the people facing the least risk before those confronting the most severe risks. W. Curtiss Priest, an economist at the M.I.T. Center for Policy Alternatives, finds the discounted future earnings approach "an economic charade":

> ...I must seriously question a methodology that does not fully consider the value of human life that has been more fundamentally valuated by our religious tenets and cultural heritage. I am not prepared to attempt to put a dollar value on a human life that reflects the value that a "good" culture should value life at, in order that it and its people survive, generation to generation and such that its welfare is optimized.[132]

The choice of discount rate is probably one of the most difficult and yet one of the most crucial factors in performing the benefit measurement. Those funds which are invested now for emissions controls could have been invested in different portfolios yielding different rates of return. How are the

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*(cont'd)

> Ashford: You must be aware of the long latencies that exist between exposure and disease. I think you are guilty of a classic error with that kind of correlation.

Ashford went on to cite an example of sulfate particulate sedimentation in Philadelphia in 1960 and lung cancer one decade later. "The correlation to an increased risk of lung cancer, country for county around Philadelphia, is remarkable."

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benefits of such an investment, which accrue over a lifetime or many lifetimes for that matter, to be weighed against alternate investment projects? Otto Eckstein emphasizes that market signals will not generate the appropriate rate. Aside from imperfections in the capital market, such interest rates generally reflect individual choice on specific investments rather than a collective judgment regarding "fundamental social values":

> ...a government must find a rate that reflects the people's desires with regard to making provision for the future. Since it cannot look to the marketplace, it must devise other means of selecting appropriate interest rates.[133]

Yet, in 1975, NHTSA employed a weighted average of rates for time and savings bonds, corporate bonds, and other assets to arrive at a 7.3% discount rate for societal loss per fatality. Applying such rate to future earnings, life is worth more the nearer in age one is to the bulk of one's future income, $103,935 as an infant, $244,155 as a young adult, and $31,700 as a senior citizen.[134]

The policy implication is to save the twenty year old before the infant and those in middle age before the elderly. Thus, when Lave and Seskin calculate the benefits ($16.6 billion in 1973 dollars) from reduced mortality from air pollution, their figure represents the value of life for those most susceptible: infants and elderly.[135]

Nicholas Ashford has argued that the nature of health benefits in contrast to monetary gains is such that the use of a discount rate may not be appropriate at all. First, positive discount rates discriminate against future generations since the further away from the present are the benefits, the less they are worth. Second, removing risks now of future damage can be considered a present benefit in reduced anxiety, for example, rather than a benefit only when the damage actually becomes manifest, as is the implicit assumption made with the use of a discount rate.[136]

The final point about the DFE approach is that it is incomplete, alone, in appraising the benefits of health and safety regulation. It cannot appraise the benefits from avoiding damage to property and things of aesthetic value. Only if damage has direct impact on economic variables--lost productivity, lost income, the creation of other expenses--can a corresponding social benefit akin to the DFE be computed.

2. Willingness to Pay

The Willingness to Pay method of measuring benefits attempts to correct for both the incompleteness of the DFE method and its narrow basis in society's value of one's labor. The value of life is here based on the individual's own valuation of that "good."

Of course, the individual would be willing to pay an infinite sum to avoid certain death. The relevant question, as Ezra Mishan established in a well-noted article, is how much are you willing to pay to avoid an added risk of death, injury, disease, damage to property and aesthetic "goods?"[137] The WTP approach is thereby the risk-benefit variation of cost-benefit analysis.

Two methodologies have been employed for estimating how much people are willing to pay to avoid an added risk--the survey, where one goes into the field and solicits responses on how much added risks to life and health are worth, and the surrogate market, where preferences are "revealed" as to what premium people do, in fact, place an added risk. For example, one ambitious surveyor, Jan Acton, asked,

> Let's suppose that your doctor tells you that the odds are 99:1 against you having a heart attack. If you have the attack, the odds are 3:2 that you will live. The heart attack program would mean that the odds are 4:1 that you will live after a heart attack. How much are you willing to pay in taxes per year to have this heart-attack program which would cut your probability of dying from a heart-attack in half (i.e. the chances are two per 1,000 you will have a heart attack and be saved by the program this year)?[138]

The resulting value for life was $20,000.

One problem with the survey approach is that people may not be honest, thinking they will benefit from a certain policy if they answer in a certain way. "The difficulty with asking people questions such as 'How much for your grandmother?'," said J.G.U. Adams, "is that they generally do not give honest answers."[139]

Going further, there is a problem over the extent to which people can identify with a risk they've never experienced--and then put a value on it. The acceptance of an added risk may also hinge on how other people will react to the added risk. Whether friends will still want to vacation with you in the mountains if the air is less likely to be clean, for example, will be an important factor in your own decision, but it will add to uncertainty when responding alone to a questionnaire. Not surprisingly, Adams is deeply perturbed by the citizen's inability to play the isolated figure his methodology requires. When ninety-five percent of the answers in a WTP poll fit into the "I don't know" category, Adams blames the educational system. "This very widespread inability to perform the calculations to controvert lives into money is a very worrying reflection of the unworldly nature of the educational system in this country."[140]

Indoctrinating people on WTP methodology, however, would probably have very little impact on the success of the survey. Responses to a different questionnaire by Michael Jones-Lee, for example, regarding higher or lower airplane fares for lower/higher risk of fatal crash, produced a 3 million pound--$5 million--value for life.[141] Such an outrageous range of values ($28,000-$5,000,000), spanning two orders of magnitudes, seems less a reflection on human intelligence than an indication of the primitive state of the art of the survey approach.

Acknowledging the complications that arise with surveys, economists have turned to surrogate markets, especially the labor market, to estimate how much people do, in fact, value life and limb. Labor market theory assumes that a worker is faced with a wage-risk spectrum; if he doesn't like the risk, he can voluntarily take a cut in pay for a lower risk. It also assumes that workers are well-informed of the risks. But, as Myrick Freeman noted, imperfections in the labor market and market for higher education act to restrict choice and render the entire surrogate market approach suspect. "These markets are characterized by barriers to mobility, imperfect information, discrimination, imperfection due to monopsony and monopoly (union) market power, and the like, and of course, involuntary unemployment."[142]

A discussion of the large disparity in the values of life in studies undertaken to isolate the wage-risk differential unveils some of the underlying biases and weaknesses of the surrogate market approach. Richard Thaler and Sherwin Rosen of Rochester University concluded from their study, for example, that the wage-risk differential implied a $200,000 value for life in 1967 dollars[143] while Robert Stewart Smith estimated life's worth at $1,500,000 in 1973 dollars.[144]

Those who are more educated and those who receive higher incomes do not face a relevant trade-off between wages and risks. Such trade-offs exist predominantly among the poor; in fact, those who have proportionately lower incomes face the highest risks. In taking their risk-estimates from the occupation study of the Society of Actuaries, Thaler and Rosen restricted their sample to a group of poor workers in very hazardous occupations.[145] Thus workers in their sample would tend to accept a greater risk for a given wage hike than a group more representative of the entire income scale. When the risk-acceptance for the Thaler and Rosen group was used to obtain a value for life, in other words, the result was biased downward. Smith, on the other hand, avoided this pitfall by choosing a sample from the Bureau of Labor Statistics that was representative of all manufacturing. Of course, neither estimate reflects what white collar and highly educated white collar workers are willing to pay.

There are other reasons why the Thaler and Rosen estimate may be too small. The estimations of risk came from insurance company data. Such figures may reflect personal characteristics of people that choose certain occupations rather than actual information about jobs hazards per se. It is curious, for example, that in the Thaler and Rosen data cooks face three times the risk than firemen, and actors face a higher risk than fisherman, foresters, power plant operators and other more physically demanding occupations.[146] As Robert E. Lipsey noted, their estimates are artificially low as a result. "Since these personal characteristics are attached to the individuals, rather than to the occupations they enter, the associated mortality risks will not be compensated for by higher wages."[147]

The immobility between institutions--income classes, races, the sexes, and unions--plays an important part in the results. It has already been noted that the poor face higher risks, but even when attempts are made to weed out such institutional effects on earnings and risk acceptance, distortions arise for two reasons: because the sample does not represent a group well, and because there is little information as to the degree of voluntary acceptance of risk within the group. For example, unions that are more risk averse--those generally with higher absolute incomes and lower absolute risks--are probably underrepresented in Thaler and Rosen's study, like the rich and highly educated. Thus, the actual impact that union membership has on risk acceptance is understated because the group is not well represented in their sample. Going further, factors like discrimination make access to risk averse unions more difficult for minorities so that groups that cannot gain entrance have less choice as to what their relevant spectrum of risk-acceptance will be.

This would help to explain why blacks were found to place a higher premium on risk than whites in the Thaler and Rosen study.[148] Relatively risk-averse blacks find themselves in risky jobs because of discrimination, not out of choice. As a Public Interest Economics study put it, "Thaler and Rosen's results are dominated by precisely those labor submarkets for which freely competitive forces are least likely to successfully match workers with jobs, or for which the risk premium is not likely to diverge from that which workers would opt if they were free to work on the job of their own choosing."[149]

Smith's study is not without its methodological drawbacks either. Since risk differentials are based upon industry averages rather than occupational data, his estimate may be biased upwards. Nor did either study attempt to account for risk-differentials of non-fatal injury. Kip Viscusi corrected for the many of the methodological errors cited above and arrived at a value of life of $1 million to $1.5 million in 1969 dollars, closer to the Smith estimate than that of Thaler and Rosen.[150]

All of these studies extrapolate risks in a linear fashion to unity Guido Calabresi questions the justification for such a procedure. Just because a worker will accept $1,000 for a risk of 1/1000 of death, implying a value of life of $1,000,000, states Calabresi, does not mean that a person will accept $10,000 for a 1/100 chance of dying--again an implied value of $1,000,000.[151] As risks get higher, so should the value of life until it reaches infinity at certain death.

As mentioned in the introduction to this section, economists justify the use of such values on the grounds that the population is large enough for life to be statistical life rather than identifiable individuals. But, the results of the studies demonstrate that the risk-wage trade-off exists only among segments of the population. As Robert Rauch, an attorney with the Environmental Defense Fund, states, "There are many, many times where we can, with a fair amount of certainty, identify groups within which a risk will occur."[152]

The less random the distribution of risk, the weaker the justification for use of the WTP approach. In his article, "How much to Save a Life?", Steven Rhoads questions the moral basis for distributing life-saving equipment according to the WTP approach since those requiring such treatment are identifiable individuals. Since the poor cannot afford such equipment, the WTP approach would discriminate against the poor.[153] Yet, when probed as to the moral basis for the skewed distribution of hazards and risks in society rather than kidney dialysis machines, Rhoads replied, "There is a certain amount of mobility in the labor market, and there is a wage differential for risk acceptance."[154] Apparently, he discounts the findings of studies like Smith's and Thaler and Rosen's on the institutional pressures exerted on risk acceptance.

Finally, willingness to pay encounters special difficulties with benefits that accrue to future generations. Individuals today cannot answer for the WTP of their progeny. Ezra Mishan considers the problem of intergenerational distribution of benefits to be of such import as to disqualify the WTP approach entirely:

> Bearing in mind that for the first time in history, we have begun to take decisions on the extent of our intervention in the biosphere that could have momentous consequences for the future of this planet, and possibly subject future generations to irremediable resource-shortages or irreversible disasters, the continued use of DPV (Discounted Present Value) criterion by economists engaged in project evaluation[155] involving future generations can no longer be vindicated.

## III. THE PRESUMED COSTS OF REGULATION

### Regulation and Inflation

Inflation may be defined as an increase in price without a corresponding increase in value. Regulation is inflationary if costs exceed benefits or, alternatively, if it does not achieve its goal in the least costly manner. Regulation is deflationary if benefits exceed costs.

Given the problems of measurement in the health, safety, and environmental area, the actual impact of such regulation on inflation is difficult to isolate. The Consumer Price Index (CPI), the measuring stick for price level increases, does not even make provision for the benefit side of the equation. We know how much a set basket of goods goes up each month. But we don't know if there has been a corresponding increase in value--as occurs when tens of billions of dollars are saved through improved public health, reduced property damage, increased agricultural and resource yields, and preservation of recreational and aesthetic values. "The inflation label is proper only when prices rise more than the value of output," states Senator Gary Hart of Colorado. "As long as price increases resulting from the cost of pollution control are matched by the value of improved products, the 'inflation' label is inappropriate."[156] And the CPI's fixation on a single market basket, says Gus Speth, now Chairman of the Council of Environmental Quality, neglects the dynamic responses of consumers, substituting less polluting items for those whose prices have gone up,

> ...it is quite likely that consumers will change their consumption patterns, switching away from the goods whose relative prices have increased to the extent that such substitution takes place, the CPI will overstate the effect of these price changes...[157]

Even with the limitations of the CPI, the results of studies demonstrate that the causes and remedies for inflation lie elsewhere. Chase Econometrics performed a study in 1976 on the impact of environmental regulation--the health/safety area that economists and corporations typically cite as the most inflationary--on the CPI. It concluded that pollution control requirements would cause an average annual increase in the index between .3% and .4% during 1970-1983.[158] A second study by Data Resources, Inc., released January 1979, revealed that even Chase's predictions were too high and the actual annual inflationary impact on consumer prices was closer to .2%[159] The Council on Wage and Price Stability estimated that all government regulation contributed .75% per year to the annual inflation rate.[160] Cartel regulation comprised over half of the total.[161] With the annual increase of the CPI at double-digit levels, even a 100% reduction in the inflationary impact of EPA on the economy would make the difference between the projected 13% annual inflation rate for 1979 and 12.8%, less than a 2% change. Charges that regulation causes inflation, while having a nice polemical if not poetical ring to them, have simply no basis in fact. The roots of out double digit inflation lie elsewhere.[161a]

### Regulation and Productivity

Productivity is defined as the amount of measured output per unit of input. Like the CPI, the index for productivity excludes the productive benefits of health and safety regulation. Pollution, disease, and injury are not treated as negative outputs along with the production of positive outputs like steel, textiles, and chemicals. The analysis is deficient even in basic economic terms since it ignores externalities. Output of steel with pollution, in productivity analysis, becomes exchangeable with pollution-free steel. Carolyn Shaw Bell, economist at Wellesley College, noted that the productivity measure is distorted as a result.

> As output is now measured, we cannot calculate a dollar return from buying and installing devices to improve the environment. But that does not mean that these devices produce nothing...The negative connotation of pollution and safety spending evolved because the way output is now measured ignores resultant economic benefits of better health for workers and of society as a whole.[162]

In the Economic Report of the President, January 1979, the Council of Economic Advisers concur that "...loss of productivity growth as a consequence of increasing social regulation does not itself imply that the costs of regulation exceeds its benefits" because of the way productivity is measured in the United States.[163]

There is also the incapacity of the productivity accounts to appraise quality changes of goods. While the Bureau of Labor Statistics attempts to account for quality changes that result in higher prices for final goods, other types of quality changes elude the BLS officials. Labeling and packaging requirements, for example, do not necessarily generate increases in the prices of final goods. Yet, the productivity accounts cannot grasp the "change in output" in a better informed and protected consumer.[164] Another type of quality change which is not reflected in BLS statistics is an alteration in design which lowers operating costs, like more fuel-efficient automobile engines and crash-resistant bumpers. And dynamic benefits from regulation--averted productivity losses due to less occupational injury and disease and productivity gains from regulation-induced innovation--are also omitted from traditional productivity analysis.

Even within the traditional measure of productivity, however, studies indicate that the source of decline lie other than in popularized arguments about the burden of regulation.

Two studies have addressed the impact of health and safety regulation on productivity. Edward Denison of the Brookings Institute estimates that without environmental and occupational safety and health regulations, productivity would have been 1.4% higher in 1975 "had businesses operated under 1967 conditions."[165] Environmental regulations were found to be responsible for 1% of the difference, while worker safety and health were responsible for .4%.[166] In a second study, Data Resources, Inc. found that the cumulative productivity loss due to environmental regulation was only .5% from 1970-1978—or half of Denison's environmental estimate for the period 1967-1975.[167] It also projected the average annual productivity decline due to environmental regulation for 1970 to 1986 to be .1%.[168] The large discrepancy between the two studies can be credited to Denison's assumption that outlays for pollution control equipment displaced "productive" investment at an equal rate. DRI found that during the early 1970s, a dollar of pollution control displaced only 33-40% of other plant and equipment investment.[169]

Of the .4% differential which Denison attributes to occupational health and safety requirements, more than half is attributed to mine health and safety standards. This analysis, however, must assume that the health of 160,000 miners, protected under the Coal Mine Health and Safety Act of 1969, is economically inconsequential. Denison acknowledges that this hypothesis stems from "informed persons" like Harold Davis, editor-in-chief of Coal Age, an industry trade journal.[170] Apparently, Denison neglected to tap other "informed sources." An in depth study of the question by Management Engineers Inc. for the Department of Energy concluded that other factors were integral in explaining productivity decline:

> Many industry officials attribute the decline in productivity solely to the effect of the Act. However, other independent factors have been changing since 1969 and undoubtedly have had an effect on productivity in coal mining. Such factors may include, for example, changes in the work force (e.g. age and experience), natural conditions (e.g. seam thickness and overburden), and mine characteristics (e.g. type, size, and location).[171]

Poor labor-management relations and high absenteeism during the period were also cited by this study as being of particular significance.[172]

Moreover, Denison neglects the benefits of mine legislation. Another study found that a 25% increase in mine inspections, for example, resulted in 3800 fewer non-disabling injuries, 1200 fewer disabling injuries, and 13 fewer fatalities. According to Leslie Boden of Harvard, only if the value of life were pegged at less than $[illegible]00,000 would there be any question as to whether the benefits exceed the costs with respect to mine safety.[173]

But then, Denison ignores entirely the benefits of regulation that could improve productivity. Less sick leave, absenteeism and health care costs--all the result of effective externality regulation--obviously add to wealth and productivity. Methodologically they are defined away by Denison.

Repeating his error, Denison found that incremental costs of safety equipment due to motor vehicle regulations and OSHA standards reduce output per unit of input by .09%.[174] Yet estimates for motor vehicles once again ignore the "learning curve" and savings that have resulted from the standards. And Denison's figure for OSHA mandated standards relies on Weidenbaum's erroneous view that, in Denison's phrase, "It appears to be the general view that OSHA is responsible for a substantial part of the total /expenditures for safety equipment/"[175] --even though, as the Business Roundtable understood, most such occupational safety expenditures would have occurred regardless of an OSHA. Denison's study arrives at the conclusion its methodology pre-determined. For if you define productivity as more steel but not less pollution, if your talisman is the Gross National Product rather than the Net National Wealth, then regulation by definition will always seem a bad bargain. As Leslie Boden pointed out,

> In a sense, the distinction between safety and production inputs is an artificial one. We are really dealing with

> the simultaneous production of coal and accidents... A distinction between production and safety is then made only for analytic convenience.[176]

## Regulation and Innovation

Two kinds of innovation are often confused with each other when the topic of government regulation arises. The first kind sees the government as instigator of innovation--forcing industry to meet performance standards or product standards that businesses would otherwise not aspire to. The second kind centers on the effects of government regulation on industry's own innovative efforts. In the former, the government promotes innovation because industry lacks the incentive to "internalize externalities"--why bother trying to reduce pollution, for example, when its costs fall on other people? In the latter, such as in cartel regulation, the government can retard innovation by its misguided effort to protect existing firms or technology.

*Government as Instigator*--When the government tries to provoke or compel innovation in the health/safety area, industry invariably argues that the exhorbitant costs of meeting the standards will be simply "passed through" to consumers. This assertion prominently appeared in the vinyl cloride standard, the bumper standard, the ozone spray-can standard, the lead-in-gasoline standard and others. The official stance of the vinyl chloride manufacturers when they appealed the standard in the courts for example was the "the standard is simply beyond the compliance capabilities of the industry."[177] As it became clear that they would lose their legal case and that policy-makers were not believing their overwrought predictions, B.F. Goodrich developed a new "stripping" process that eliminates any detectable vinyl chloride emissions in the air.[178] Total cost of compliance according to new industry figures was $300 million, not the original industry estimate of $90 billion. There was no job loss, rather than the 2.2 million which industry had projected.[179] The cost of operating equipment went *down*. Furthermore, no cost-benefit analysis had reflected the dynamic benefits of innovation: the extra revenue netted by B.F. Goodrich for leasing its technology to other firms and industries and the acceleration in improvement of polymerization technology already in development.[180]

Nor did preliminary business cost-benefit analysis predict the savings from FDA's ozone standard, which spurred the commentic industry to replace the more expensive aerosol model with a pump spray. Industry had claimed that the cost of meeting the standard would "pass through" to the consumer. Yet when it did, it was in the form of a savings. And new car owners will spend $110 less in bumper cost and repair over the life of their new vehicles because of NHTSA regulations for more crash-resistant bumpers. The lighter weight material used for bumpers defied auto manufacturers' original contention that the new crash standards would necessitate heavier bumpers, increased fuel consumption, and costs "passed through" to the consumer.

Contrary to the conventional wisdom that spending for "spillover effects" is only a productive waste, 3M in 1975 launched their "Pollution Prevention Pays" campaign. Its objective: "to encourage and organize technical innovation to eliminate pollution at the source, before clean-up problems occur."[181] The elimination of 25,000 tons/year of air pollution, 1325 tons per year of water pollutants, and 2900 tons of sludge, has already saved more than $20 million for that company and its subsidiaries in clean-up costs.[182]

Similarly, ergonomics, the "art of designing jobs and work processes to fit human psychology and physiology, rather than requiring workers to adapt to their machines,"[183] is also a preventive technique that "pays". In one ergonomics related experiment supervised by OSHA, the use of "light-curtains" to activate mechanical power presses virtually eliminated accidents while increasing production by more than 30%.[184] The results of a project in the paper industry in Sweden have demonstrated that, when noise control is engineered into equipment, the costs are much lower than previously estimated. Noise was reduced in many paper plants from 110 dB(A) to 85 dB(A), at a cost of only 1.1% of the new equipment. In addition, the new, faster machines increased productivity 25%-30%.[184a]

Another dynamic benefit not included in economic analysis is the economies of scale that are reached in the ergonomics and pollution-control industries as a result of regulation. One study predicted that such benefits from ergonomics may be substantial:

> Such standards would provide not only an incentive for employers to purchase more safe and healthful equipment, but a powerful motive for tool and machinery manufacturers to make and promote that equipment as well.[185]

And, in a recent speech before the American Chemical Society in Miami, the Vice President of U.S. Trust Company indicated that economies would also be reached in pollution-control:

> Water treatment chemicals should benefit from rising government regulations on industrial use of water and higher pollution controls, while flame retardents will benefit from increased performance standards in plastics. Special adhesives should participate in energy conservation and trends toward lighter weight automobiles and engines.[186]

Solid waste regulation has spurred developments in recycling technologies that are increasingly attractive financially as fuel prices soar. Such dynamic benefits of regulation rarely find their way into industry cost analysis.

Industry's Own Innovative Efforts--Traditional economic analysis treats research and technology funds devoted to compliance with government regulation as diversions from the innovative process. Arthur Anderson, for example, pegs the research and development costs of regulation at close to

$100 million. The figure rides on the largely unexamined and spurious assumption that industry response to regulation cannot promote normal innovative activity. One foreign-based study suggested that environmental regulation had a "substantial stimulating influence on improving quality and performance (of innovation)."[187]

Compliance with regulations often leads as well to normal product improvements. In a different five-country study, a textile manufacturer was found to have developed a more colorfast and saleable dye while concentrating on lessening worker exposure to toxic fumes.[188] Finally, regulation revitalizes "normal" innovative efforts in industries considered to be sluggish:

> Ancillary innovations... may arise most often in industries not previously innovative and may occur because of the necessity (brought on by regulation) to rethink established and therefore unquestioned modes of operation.[189]

Even the extent that government regulation has diverted funds away from "normal" innovative activity is difficult to determine. A business group, headed by Donald Frey, President of Bell & Howell, stated in a study performed for the Department of Commerce, "It likewise becomes evident that there is not a clear consensus of the impact of regulation, safety in particular, on innovation."[190] They suggested that the evidence to support the position that government impedes innovation is "largely anecdotal."[191] Most anecdotes pivot on the impact of the 1962 drug amendments on the pharmaceutical industry's innovative effort, which, in turn, invariably leads to a citation of Sam Peltzman's 1972 study of the issue.[192]*

Peltzman concludes that a decline in NDA's (New Drug Applications) and a "drug lag" for the introduction of new drugs on the market after 1962 were attributable to the 1962 legislation, which imposed an added cost to the consumer of $250-$350 million/year. Peltzman's analysis reflects a disregard for the history of drug development in the post-war era, when pharmacology was basking in a Golden Age of scientific breakthroughs.

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*Peltzman's critique is covered in more detail on pages 114-120.

Most of that post-war knowledge had been adapted to new drugs by the mid-fifties. The decline in NDA's was part of a worldwide phenomenon which began then and continued since then, not in 1962 when the amendments were passed.[193] Furthermore, a NDA is hardly the measure for good drug therapy. Industry had been concentrating their valuable R&D resources after 1955 on molecular variants of existing drugs rather than significant advances in drug therapy.[194] Patents were extended with new NDAs without corresponding benefits. In that respect, the amendments appear to have revived an otherwise sluggish effort in a highly concentrated industry. Jerome Schnee, whose study on innovation in the pharmaceuticsl industry provided data for Peltzman's study, contends that since the 1962 amendments the pharmaceutical industry has focused on the more time-consuming research of therapeutic breakthroughs.[195] Quality of innovation became the focus of innovation.

Peltzman takes issue with the latter finding by employing another controversial index, New Chemical Entities (NCE's), as the measure of *significant* drugs.[196] Even that index has not shown a distinct pattern, reaching a peak in 1959, not 1962. As one drug expert testified before a Senate committee, "Rate of introduction of significant drugs has remained stable at 3-5 per year over the past twenty years."[197] That the rate remained the same despite the decline in NDA's is an indication that the 1962 amendments had a *positive* effect on drug innovation.

The crucial question which Peltzman's study raises is -- "innovation for what?" Economic measures of innovation are indifferent as to whether research and development funds are funneled into a new flavor of chewing gum or cancer research. It is a peculiar definition of "productive" innovation which ignores the maintenance of safe products, a healthy workplace, and an unpolluted environment. In that respect, innovation is a flawed measure like productivity, for no provision is made for quality. The value of innovation simply cannot be captured in formal economic indices: the number of patents, the volume of expenditure on research and development, or for that matter, the number of personnel involved in research and development endeavors. Gillette, for example, spent $18 million over two years to convince people that a new antiperspirant was drier than another.[198] According to an assessment made by Ford Vice President Donald Frey in 1964, the last substantial innovation in the automobile came in the late 1930's with automatic transmission.[199] Instead, development funds have been concentrated in the most mundane areas: cosmetic changes and superficial gadgetry, $900 of which is included in the price of every car.[200] "The companies have become collaborators, rather than competitors," states former Secretary of Transportation Brock Adams.[201]

The progressive trivialization of innovation was seen by Joseph Schumpeter in his cyclical analysis in Capitalism, Socialism, and Democracy. The primary cycle of scientific discovery triggers smaller cycles in process development which in turn generate the smallest cycles of product variation.[202] Studies conducted by Almarin Phillips, Frederic Scherer, and William Comanor support Schumpeter's contention: "intensity" of industrial R&D efforts is strongly correlated with an index of technological opportunity.[203] Thus, private spending on R&D, as a percentage of sales, has traditionally been highest in technologically developing areas such as electrical equipment, communication, chemicals, instruments (measuring devices, optics, photographic equipment, and surgical instruments), and the aircraft and missiles sectors.[204]

Schumpeter is better known, however, for his hypothesis that industrial concentration would create firms large and wealthy enough to afford the risks of inventions. Evidence, however, fails to support this hypothesis. W.R. Maclaurin concludes in his study of the radio industry covering the period of the 1920's and 30's that technical progress in communication equipment would have been more rapid if A.T.&T., General

Electric, and Westinghouse had not restricted competition by forming the Radio Corporation of America.[205] In another study, Arthur A. Bright concluded that fluorescent lighting and other advances in illumination may have been stifled by cartelization in the lighting industry during the same period.[206] Similarly, those oligopolistic industries with one dominant firm often receive their innovative impetus from their smaller bretheren. IBM's belated entrance into digital electronic computing equipment and time-sharing computers, Gillette's record in developing the steel razor blade, as well at A.T.&T.'s experience in the development of microwave and relay systems and communication satellites can be traced to the innovative pressure of smaller competitors.[207]

For it is often the independent inventor who is responsible for the earliest, most creative, and riskiest stage of the innovative process. In their study, The Sources of Innovation, John Jewkes, et.al. found that less than one third of the sixty-one case histories of important 20th century inventions had originated in industrial laboratories.[208] The ballpoint pen was invented by a sculptor, the dial telephone by an undertaker,[209] and IBM's disc memory unit, the heart of today's computer, was developed in one of its labs as a bootleg project. A handful of researchers had ignored management's order that the project be dropped because of high costs.[210] Scherer concurs that there is no unambiguous correlation between firm size and innovation. If anything, he states, there appears to be a threshhold beyond which large firm size has a "slight to moderate stultifying effect on innovation."[211]

Whether technological opportunity -- for which there is no objective measure -- presents itself to an industry or not, it appears that the facility with which firms can enter an industry, influences the intensity of innovative effort and receptiveness to new innovation. As economist S.G. Sturmy concluded from his study on innovation, "... the major economic force leading to innovation is not any particular structural form in the industry, but the conditions regarding entry to that industry... Where the entry of significant competitors is possible, innovation will be much faster."[212] Foreign competition, for example, has revitalized sluggish and highly concentrated "mature" industries such as steel and auto. Continuous casting and the basic oxygen process in steelmaking were refined in Japan. Disc brakes, three-point shoulder harnesses, radial tires, and stratified charge engines made their debut on foreign cars before they were introduced in the U.S. Market concentration, colossal firm size, and barriers to entry, in other words, seem to be far more correlated with decreased innovative activity than does regulation.

### Regulation and Unemployment

Health, safety, and environmental regulation has been accused of causing plant shutdowns for firms that cannot afford to meet standards, thus raising the unemployment rate. Evidence from various studies demonstrate that this impact is extremely small.

The Environmental Protection Agency maintains a catalogue of firms which have shut down or have threatened to shut down and that have blamed pollution control requirements as part of the reason. This "Early Warning System" indicates that there were 118 plant closings, affecting 21,900 employees (.02% of the labor force) between 1971 and 1977, according to industry estimates.[213] Moreover, such plant closings are only partially related to pollution control requirements. As an earlier Department of Commerce survey revealed, age or obsolescence of a facility was cited as a contributing factor in over 60% of the plant closings.[214] The Council on Environmental Quality states in their 1978 report, "In many instances facilities would soon have been closed anyway, and environmental regulations simply accelerated the process."[215]

Environmental regulation, upon scrutinity, not only doesn't create unemployment but is probably one of the most productive jobs programs in the history of our country. Construction of sewers and sewage treatment plants, for example, is relatively labor intensive. Each $1 billion dollars spent generates 20,000 to 25,000 jobs at the construction site, a similar number of jobs in manufacturing the equipment and materials required for the facilities, and after including the impact of the workers' compensation expenditures, up to 85,000 jobs in all.[216]

A macroeconomic analysis performed by Chase Econometrics in 1976 found that the effect of federal environmental programs was to lower unemployment by .4% in 1976 and .5% in 1977.[217] While the study predicted that the effect would reverse itself by 1983, a 1978 update by Data Resources, Inc. found, contrary to the Chase study, that unemployment will be lower throughout the 1970-86 period due to environmental standards.[218]

Attempting to quantify these impacts, the National Academy of Sciences estimates that pollution control activities were directly responsible for 677,900 jobs by 1974.[219] A study by the Bureau of Labor Statistics indicates that approximately as many jobs are created indirectly as directly by federal spending on pollution control.[220] Taken together, the Environmental Industry Council estimates that a total of 1.5 million jobs were created as of 1974, 2.0 million by mid-1978.

Economist Milton Friedman, for one, readily concedes that environmental programs have been job creating. "But it has been creating unproductive jobs at the expense of productive jobs," he adds. "Work per se is not a good thing. We don't want to have people digging holes just to fill them."[221] No we don't. But is spending for jobs to protect the environment "leaf-raking"? It turns on the level of benefits produced, which is discussed extensively in the final section of this report.

## V. ALTERNATIVES

For those who consider market failure the only rationale for health and safety regulation, and health and safety as just other commodities for trade, the appropriate government policy may be one to make the market more efficient. Charles Schultze, Chairman of the President's Council of Economic Advisors, maintains that we should recognize the value of market incentives and alternatives to the traditional "command and control" approach represented by mandated standards.[222] Among such alternatives are tax and subsidy schemes, redistribution and sale of property rights, the levying of stringent fines and penalties for noncompliance, and the better dispersion of relevant information.

While all of the health and safety agencies have adopted some mix of information and standards, EPA stands alone in experimenting with the price system. (It is the only agency which has received a legislative mandate to use market incentives as a supplement to traditional regulatory schemes.) For example, EPA establishes penalties on the basis of what the violator has saved through noncompliance. Presently under consideration by the agency is the marketing of fluorocarbon emission permits (pollution rights), setting emission charges for other pollutants, and establishing the "bubble" concept where a firm is allowed to choose its own mix of pollutants not to exceed a predetermined level.[223]

Each market alternative has its peculiar advantages and drawbacks, and the best should be experimentally considered if they appear able to deliver comparable results at lower costs. But the strict reliance on market incentives in general, for allocating health, safety, and environmental protection, is beset with fundamental problems.

## The Trouble with Effluent/Market Alternatives

Consider, for example, the "charge" or "tax" scheme, since it is the one which has gained favor among economists. Section I above argued that health and safety were of a different character than traditional marketable commodities. Regulation is required not merely to correct for market failure, but also to protect fundamental liberties and primary goods. Taxation of pollution and incentive approaches do not make provisions for quality. At best, market efficiency means payment, not necessarily prevention; compensation, not restoration. To correct for market failure, a tax would ideally be levied according to the damage done by the individual polluter -- the extent of the externality. The firm would choose prevention up to the point where incremental damages -- benefits -- were less than abatement costs. In practice, however, as has been discussed in this report, it is impossible to fully chronicle and quantify the damages associated with pollution and workplace illness. Toby Clark, assistant to the Administrator at EPA, commented on a Delaware River Basin analysis which concluded that concentrating discharge reduction where it was cheapest would cost 40%-50% less than uniform treatment requirements.

> Basically,... it showed that you got tremendous efficiencies as long as you did not want the water to be too clean. If you wanted the water to be very clean, that study showed there are no efficiencies to be gained from the incentive approach.[224]

As the authors of a study sponsored by Resources for the Future (hereafter referred to as Anderson, et.al.) recently noted, "...the lack of data on the full external costs of pollution is the Achilles heel of the theoretically ideal charges system."[225]

A tax calibrated to damages, whether employing discounted future earnings method or willingness to pay approach, would also be contingent on the locus of benefits. Therefore it would vary with the density of the population and property values in the victimized area, and the specific location, potency, and variations of the discharge with climatic changes, as well as changes in discharge volume over the course of a day. The inadequacy of information, the inaccuracy of equipment, and the costs of both preclude such fine tuning.[226]

Proponents of incentive approaches have contended that the problem of inadequate or incorrect information would become less onerous with incentive approaches. "Standards rely upon accurate and complete information which is difficult to obtain, and errors can cause harm," according to an American Bar Association Committee. "A tax system might avoid some of these difficulties."[227] Yet it is not clear how a tax system would induce corporations to divulge such information, especially when the tax is calibrated according to abatement costs based on data held by regulated firms. Industry would have all the more incentive to make "reasonably attainable" costs seem like outrageous costs so that charges are set at levels of abatement which industry prefers. Furthermore, other avenues are available to correct any corporate suppression of information. It was just this likelihood that led Congress to grant NHTSA the authority to obtain cost data directly.

In the substantive rather than mechanical sense, the information problem becomes more acute with the introduction of a tax approach. The same body of information on costs and benefits, probabilities and risks, that is required to engage in cost-benefit analysis and "command and control" regulation is also needed to set taxes at efficient levels. The need for accuracy is even more crucial when regulating via the price mechanism: in the case of standard setting, such information enters only as one component in the final decision; in the case of fixing the precise rate of taxation, it becomes dispositive.

Indeed, the ABA report continued that "in certain areas standard setting is essential. Certain dangerous chemicals or pharmaceuticals must be altogether prohibited or their use or availability regulated. Even when such substances involve unknown risks, standards greatly limiting or prohibiting the use of such substances may be necessary when the potential risks are great enough." The tax approach got nowhere in the early seventies, even though it was argued at length in the economic report to the President. The reason, according to then CEA member, Hendrik Houthakker, was that "information requirements for correct tax levels are higher than for standards."[228]

Rather than calibrating charges to potential benefits, economists generally turn to a "cost of abatement" approach to establish charges. "Pollution control cost data, on the other hand, are more readily available," state Anderson et.al., "so charges designed to bring about desired levels of pollution control are often more practical."[229] And, instead of trying to incorporate all of the point locales of benefits in space and time, many economists favor charges that would produce an average quality of control over an area or region during a specific length of time. What would be the relevant area — the area in a region? over a firm? a stack? -- is a particular point of contention for EPA's "bubble" concept and points up some of the problems with setting standards according to cost of abatement.

The larger the area, the more flexibility industry would have in choosing abatement techniques. Armco Steel in Middletown, Ohio, for example, felt that it could save $1.5 billion by 1985 in controlling particulates by hosing down dust on iron ore rather than restrict emissions from coke ovens. A bubble over the whole plant, the company estimated, would save 25% over current regulatory standards, whereas a bubble over everything except coke ovens would save only 14%.[230] But coke ovens give off carcinogens (e.g. benzopyrene) and are more cancerous than wind-blown dust. An 11% increase in abatement costs, in other words, was well worth the added benefit. A policy calibrated just along abatement costs might not minimize net costs. As a _Fortune_ article noted, "Obviously, it would be foolish to permit more of these fumes to escape in return for tighter control on common road dust."[231] When EPA was considering the extention of the "bubble" concept to water pollution, Senator Edmund Muskie, D-Maine and Chairman of the Senate Environment and Public Works Subcommittee on Environmental Pollution, wrote to EPA Administrator Douglas Costle, stating that the bubble approach "... has the potential of reversing progress already gained in pollution control, would be disruptive to clean-up efforts and would make enforcement of the statute very difficult."[231a]

It is also for such reasons that the most sophisticated system of effluent charges in the world -- the Genossenschaften (regional water resource associations) in the Ruhr Valley of West Germany -- may not be a cost minimizer. "From the point of view of strict economic theory," states Allen V. Kneese and Blair J. Bower, "... they violate the principle of marginal cost pricing."[232] Charges are set by the eight Genossenschaften, the earliest of which was established in 1904. Effluent charges are set to net enough revenue required to undertake projects -- dams, waste-water treatment plants, pump stations, etc. -- which will assure water quality suitable for drinking and recreation. They are distributed among users according to the damage their effluent has on fish. While the overall goals have been met (except for the Lippe River, second largest of the five-river system, where water salinity from mine effluents make water unsuitable for drinking), one hopes that the benefits lost in sacrificing the Emscher River to a waste transmitter did not outweigh the costs. It is sometimes 90% waste water, 10% natural flow. "Whether the use of the Emscher as an open sewer (is beneficial)," says Allen V. Kneese, "... cannot be conclusively determined partly because explicit valuations of recreation use have not been made."[233]

And the impetus provided for industries to install pollution abatement equipment rather than pay charges is not entirely evident. While there may be some activity after the initial imposition of charges, they do not seem to respond as much later to changes in the charge level. "In the Ruhr," according to Anderson et al., "pretreatment by individual sources subject to the charge is common, but the extent to which the charges are responsible for the result is not clear."[234]

Other inefficiencies may arise in the Ruhr because it may be more cost-effective to undertake smaller projects near the source of discharge than the traditional approach of large-scale and collective projects devised by the Genossenschaften.[235]

The American Bar Association and Charles Schultze also maintain that another benefit of utilizing market incentives is increased innovation "into socially desirable directions." Standards, they contend, are "technology-freezing" because there is no incentive to innovate beyond the stipulations of the standard.[236] The law that stipulates water effluent limits based on "available technology economically achievable," states Schultze and Kneese, "discourages innovation because that would put firms in the ironic position of handing the regulatory authorities the means of imposing on them new and more costly standards of pollution control."[237]

As outlined in the section on regulation and innovation, the outcome described above has hardly been the case. By setting standards and adjusting them on the basis of "best demonstrated" technology,the health/safety regulatory agencies (unlike the economic agencies) have encouraged new technologies. Indeed, such was the finding of the Business Roundtable study.[238] According to an MIT research team, "... the possibility of a revised standard creates a market incentive to innovate while the implementation and enforcement of the standard results in rapid diffusion." In addition,"competition may be enhanced between firms who might gain a competitive advantage by developing cheaper or more effective compliance technology."[239] Once a less costly or more potent technology is developed under the "tax" or "penalty" system, the cost of noncompliance -- upon which the "tax" or "penalty" is based -- goes down for all firms in the industry. The firm has little incentive to innovate, however, unless there is a chance of gaining an edge over a competitor.

Non-competitive markets weaken further the innovativeness of the market incentive approach. Oligopolistic firms, or licensed monopolies like electric utilities that set price according to cost-plus principles, are unlikely to feel the need to innovate, wistfully passing off the cost of non-compliance to consumers and workers. And if the industry that is polluting the air also has price-setting power, monopoly profits can be used to purchase marketable permits. The result could be an even less efficient allocation of resources than under no regulation. As Wallace Oates and William Baumol caution, "If an industry routinely shifts all of the cost of such fees without attempting to reduce waste emissions in order to lower its tax payments, much of the intended effect of the tax program will be lost."[240]

Finally, increased cost of enforcement is another asset sometimes cited for employing the price mechanism. Industries would find it in their self-interest to regulate themselves, proponents argue.[241] Such an argument neglects the new costs that necessarily arise to monitor and administer such a system. An economist familiar with the growing complexity of enforcement, Allen Ferguson of the Public Interest Economics Foundation, was skeptical of the alleged savings in enforcement costs:

> Emission monitoring capabilities have improved enormously in the past ten years, but even the most reliable systems require continual calibration. The possibility of tampering or more likely, equipment failures would make collection of emission charges exceedingly difficult.[242]

When Anderson et al. described the attributes of an ideal system, it became clear they were also engaged in the pursuit of science fiction:

> The ideal measurement device would be a small black device which would be affixed to the stack, outfall, plant gate, or landscape to be monitored and would continuously measure and record promoters on which charges are to be levied. This little box would be extremely reliable, require virtually no maintenance, be impervious to tampering, and cost no more than ten dollars a year to purchase, install, and operate. Of course, no such wondrous machine existent either in reality or even as a glimmer in the eyes of the instrument manufacturers.[243]

Kneese and Bower withold final judgement on the efficiency of the Ruhr system since there are no figures on administrative costs. Yet, they acknowledge that the resources which go into charge-setting and collecting, project design, and monitoring are considerable.

### Hybrids - A Possible Alternative

Recognizing the limitations of using the price system, many economists have reached a consensus that standards are often necessary but that some mixture of standards and charges would be desirable. Oates and Baumol for example, conclude that controls have some distinct advantages. "We cannot expect controls to achieve environmental objectives of the least costs, but they may be able to guarantee substantial reductions in damages to the environment, a consideration that may be of particular importance where threat to environmental quality are grave and time is short."[244] When they work in tandem, standards and incentives can guarantee a desired outcome which may not be possible under strict tax system, and then allow some flexibility above that. EPA solves the monitoring problem, to some extent, by placing the burden of proof on industry that an alternative will satisfy the constraints of the "bubble." Those constraints, as a matter of fact, are standards set by the agency.

## Performance versus Design

Mandated standards can allow for a certain amount of flexibility by specifying performance over design. By stipulating the force of impact that new bumpers should withstand rather than the design of the bumper itself, for example, NHTSA gave auto manufacturers the opportunity to experiment with different materials so as to achieve goals at minimum cost. All of the health, safety and environmental agencies have made a committment to performance over design standards.

Performance and design are not mutually exclusive alternatives, but ends of a spectrum on which policy must be carefully weighed. The CPSC specifies a blade stopping time for walk-behind lawn mowers with rigid blades, for instance, which industry can meet in any way it chooses — a performance standard. A clutch mechanism happens to be the sole technology at this point by which the result can be achieved. The trade association for power equipment has therefore accused the CPSC of setting a restrictive design standard, stipulating an engineering rather than a safety result.

Absolute shifts to the performance end of the spectrum, however, may entail hidden costs. First, the burden of compliance may shift away from management to the worker as specifications become more performance oriented.

That is the case with such performance "alternatives" as respirators for controlling cotton dust and ear plugs for controlling noise, both discussed in this section. Added burdens may be imposed as well on small businesses that do not have the in-house technical expertise that large firms often possess to experiment with compliance strategies. Nicholas Ashford has argued that "performance standards can only work where information and technical expertise is fully available to the firm." [244a] Second, the set of data required to know the desired result is a different one and often a more detailed set in the case of performance goals than the one required for a design specification. The reason is that secondary effects tend to multiply as one progresses from design to performance.

These two major problems, the shifting of burdens and the new data requirements, are also the primary difficulties with "cost-effectiveness", the underlying rationale for using performance over design.

Cost-Effectiveness

Cost-effectiveness has been distinguished from cost-benefit analysis in the belief that there is no need to place a value on life in the former approach. Goals are agreed upon and only the method by which the goal is realized is subject to review. That method which achieves the goal in the least costly way is the most "cost-effective."

As previously observed, however, alternatives that perform identically are rare. Cost-effectiveness therefore often transforms into an incremental cost-benefit analysis. A scrubber might be able to reduce sulfur oxide emissions from .5 to .08 ppm, while another method reaches .12 ppm at two-thirds the cost. The reduction to .12 ppm is surely less expensive than the incremental reduction to .08 ppm, but whether it is desirable depends on whether society's goal is a little cleaner air or much cleaner air -- which in turn depends on the incremental benefit of going from .12 to .08. Benefit analysis therefore creeps back into the equation. Peter B. Bloch, for example, who was staff director for the American Bar Association report on regulation, counselled a business conference that "cost-benefit is dead. You've got to push cost-effectiveness." "But doesn't that come down to the same thing?", he was asked. "Well, eventually you have to determine which regulations will be included in the regulatory budget, and benefits will have to be compared."[244b]

The complication of Bloch's "cost-effectiveness" alternative becomes evident when one looks at actual regulatory examples. Wearing respirators is an alternative to an engineering standard for controlling toxic substances. Ear muffs and plugs are alternatives to eliminating noise from the workplace. All have been claimed to be cost-effective; they're not.

A panel of experts on respirators concluded that "at best, any of these devices are an instrument of torture."[245] A shift of burdens?

> ...they were extremely uncomfortable to wear; impair vision; preclude speech; do not evaporate perspiration; cause allergic reactions; drying of the eyes; increase fatigue, and accidents; cause excessive noise levels and particularly, if operating in the demand mode, place considerable stress on and exacerbate pulmonary function problems and weak hearts. Moreover, face pieces manufactured in America are available in only one size and shape, which may increase wearer discomfort and the possibility of leaks.[246]

Some respirators also require recharging 12 to 16 times a day, as well as other maintenance.[247] All of the drawbacks lead to the conclusion that "their impact on worker productivity would be devastating,[248] up to a 20% loss, according to OSHA.[249] Cost-effectiveness analysis, in this case, obviously ignored the increased cost of production which accompanies the use of respirators. Yet, as detailed in the section on OSHA, it was Barry Bosworth, then Director of the Council on Wage and Price Stability, who felt that OSHA had not adequately considered the respirator alternative in establishing its final standard for cotton dust.

Studies show that the conditions under which ear plugs and ear muffs are tested -- stipulated by the American National Standards Institute (ANSI) -- are impossible to replicate in the field. Their effectiveness is therefore far below test results. For example, subjects are required to wear nothing on their faces when the ear muff is tested, according to Kenneth Stewart, professor of industrial and environmental health science at the University of Pittsburgh. Workers in the field, on the other hand, are often required to wear glasses in addition to ear muffs. Since the muffs have to fit over the glasses, a small amount of leakage results which is enough to render the muffs ineffective. If worn properly, the muffs must fit tightly over the head, but the strong pressure from such a fit slows down the blood circulation in the skin, resulting in inconvenience and pain.[249a] A NIOSH study of ear plugs concluded that "half of the workers tested were receiving less than one-third of the potential attenuation of the hearing protectors" because of differences between testing conditions and those in the field.[249b] Plugs often give rise to eczema in the ear canal.[250] When it is hot, ear protectors become irritating and sweaty. Other secondary effects of wearing ear plugs and ear muffs include the masking of sounds that are meant to be heard, like ordinary conversation or back-up alarms on heavy-duty vehicles.[251] Still, the economics literature is replete with discussions of how ear muffs and ear plugs are more "cost effective" than noise controls. Albert L. Nichols and Richard Zeckhauser write in The Public Interest, a journal edited by Irving Kristol and Nathan Glazer, "OSHA's opposition to the use of personal protection equipment is particularly costly with regard to noise, where relatively inexpensive ear plugs or muffs can provide workers with the same protection afforded by very expensive engineering controls."[252]

Data concerning the operation of the destructive agent -- asbestos, cotton dust, noise -- must be more complete if alternatives are to be evaluated; such information is not available and never will be. On the other hand, the standard that mandates control at the source does narrow the realm of unmeasurable and often ignored secondary risks. Respirators used in lieu of the asbestos standard, for instance, would not eliminate the transmittal of disease to the workers' families through contact. Cost-effectiveness calculations, then, like their cost-benefit counterparts, cannot gauge the true associated risks with respirators any more than with an engineering standard since the current state of knowledge about risks for both is incomplete. In fact, because of the greater range of secondary effects that necessarily arise when the problem is not snuffed out at the source -- as have occurred with respirators, ear plugs, and ear muffs -- alternatives often pose hidden costs which are glossed over by cost-effectiveness analysis.

## VI QUANTIFYING THE BENEFITS: A LOOK AT FIVE AGENCIES

### A. Occupational Safety and Health Administration

When the National Safety Council released the findings of its survey on occupational hazards in 1970, it found that industrial accidents claimed the lives of 14,000 workers a year; another 2.2 million, it was estimated, received disabling injuries.[253] Another source places the annual injury rate at 11 million, or 15% of the civilian labor force.[254] If anything, the estimates of the health epidemic made the safety figures lock small in comparison. Coal miners' pneumoconiosis, asbestosis, beryllium disease, angiosarcoma (liver cancer from vinyl chloride) -- a long list of workplace induced diseases add up to 390,000 new cases of occupational disease every year and 100,000 deaths.[255] "100,000!" Jacob Clayman, then Secretary-Treasurer Industrial Union AFL-CIO exclaimed in a Senate hearing, "It boggles the mind."[256] Evidence today establishes that 23-38% of all the annual cancer deaths a year is due to workplace exposure, not including the effects of radiation exposure or certain known chemical carcinogens.[257]

According to the National Safety Council, workplace injury devoured one percent of GNP in 1971; it estimates in that year that there was $9.3 billion in lost wages, medical expenses, insurance claims, productivity delays and lost time of coworkers.[258] The corresponding figure for 1978 is $23.0 billion.[259] In addition, according to Nicholas Ashford, another $10 billion is lost if occupational disease is responsible for just one day of absence per worker of the 25 million workdays lost in 1972 due to injury.[260]

Ashford, however, does not attempt to estimate the cost of treatment for disease. One study currently underway at the Department of Labor has made a preliminary estimate that if cost to workers could be fully established for occupational disease and reimbursement was extended to cover all such costs -- workers' compensation presently covers as little as 3% of occupational diseases[261]--

the tab would be somewhere between $30 and $50 billion.[262] The quantifiable monetary loss to society from occupational hazards, in other words, could be over $70 billion every year.

By the turn of the last decade, federal legislation was overdue in the area of workplace health and safety. The evidence pointed to a dire condition getting worse; the rate of accidents in manufacturing between 1960 and 1970, for example, rose 26.7%.[263] Workplace safety and health could no longer be entrusted to the states where, as one study put it, "Prior to OSHA agencies relied entirely upon persuasion; employers were fined on only rare occasion... Employers who failed to correct violations were simply told again to correct them."[264]

After considerable congressional debate, the final OSHA act (William-Steiger Act), signed into law on December 29, 1970, lodged the responsibility of enforcement with the Secretary of Labor. In the area of safety, change was sought less by new standards than by a federal system of inspections and fines. In the area of occupational health, OSHA was to draw on the technical expertise of the National Institute for Occupational Safety and Health (NIOSH) to establish permanent standards that industry would find "feasible".

Yet from the start OSHA has been a favorite and inviting target for industry and ideologues who oppose government intervention in the economy. Industry's first line of attack on OSHA regulations, for example, was that its regulations were "nitpicking". Murray Weidenbaum contends that "Most citizens will support the agency's effort to eliminate work environments which are associated with lethal hazards, but will wonder... why the agency wastes its time promulgating... standards concerning the specific dimensional requirements for partitions between toilets."[265] But where did those "nitpicking" regulations on toilet seats, exit lights, fire extinguishers, ladders -- the fodder of Ronald Reagan's anti-government speeches -- come from? Industry itself. During the Nixon

Administration, when OSHA was born, industry developed these standards in conjunction with the American National Standards Institute and the National Fire Protection Association. OSHA's mandate instructed the agency to adopt them wholesale as interin standards.[266]

The agency's elimination of 928 of those standards during the Carter Administration has forced industry into its second line of defense. Says Weidenbaum,

> Please do not be put off by the good news that OSHA is finally getting around to eliminating those silly "Micky Mouse" regulations on toilet partitions, etc... The main event... is OSHA's carcinogenic proposal. Unless the agency... changes its mind, that regulation will result in costs to the private sector which will exceed the cumulative cost of complying... to date.[267]

In other words, all regulation is under fire, not on the basis of effectiveness but economic cost. A close look at OSHA's record in the areas of safety and health demonstrate that the benefits of regulation have been substantial -- much greater than the costs. If anything, OSHA should be strengthened, not cut back.

Safety--Industry often places the blame of industrial accidents on worker carelessness. But a task force on Occupational Safety and Health recently estimated that 25% of industrial accidents could be prevented through regulatory enforcement of existing standards.[268] George Hagglund of the School for Workers at the University of Wisconsin determined that the worker alone could be faulted for industrial accidents only one third of the time. On the other hand, unsafe working conditions contributed in 60% of workplace accidents.[269] Beyond prevention, the seriousness of those accidents that do occur can be mitigated through different safety designs. Greater accident reduction could be achieved through the use of ergonomic techniques -- engineering equipment to conform to the worker and the workplace environment. How well has OSHA performed?

Few would disagree, even within the agency, that OSHA got off to a shaky start. One reason was the hostile political environment. In the infamous June 14, 1972 "Guenther Memorandum," then Assistant Secretary of Labor George Guenther promised to promulgate "no highly controversial standards (i.e. cotton dust, etc.)" so as to use "the great potential of OSHA as a sales point for fund raising and general support by employers" in the Nixon reelection effort.[270] Added to the political problems, OSHA was given an inspection team of 660 for a universe of 5 million workplaces in 1973. Obviously, priorities had to be established.

OSHA adopted a "worst-first" approach, by which it concentrated on those industries with the highest incidence of accidents and the most serious violations. In its first 46 months of operation, 213,000 inspections were conducted, and 145,000 employers were cited for 750,000 violations. While OSHA can levy fines up to $1,000 per violation, its average penalty was just $25 during that period.[271]

Early studies concluded that the effects of OSHA's enforcement efforts were nil. Robert Stewart Smith, for example, found the program to be ineffective in lessening the rate of accidents.[272] In a preface to their concurrence with Smith's findings, Albert L. Nichols and Richard Zeckhauser write:

> Despite the optimism with which the agency was launched, few are happy with OSHA's performance. Both politically and practically, it has been a failure. It has generated fierce antagonism in the business community and is viewed by many as the quintessential government intrusion.[273]

Documenting such a conclusion, they note that post-OSHA injury rate data "fail to reveal any clear trends..."[274] In manufacturing industries, the rate for injuries serious enough to result in lost work days rose 7.1% from 1972 to 1973 and an additional 4.4% in 1974, but fell 4.3% in 1975, for an average that is virtually the same as the 1960-1970 average.[275]

These gross statistical conclusions are simplistic and flawed. First, one has to have an idea of what the injury rate would have been without OSHA. Data from the sixties indicate a trend that injuries were on the rise and there was little reason to believe that it would not continue to rise.[276]

A leveling off during the 1970's, then, might be attributed to OSHA. Second, the federal law put stiff requirements on the reporting of injuries. Some of the increase in aggregate injury rates during the early 70's is most likely attributable to better reporting. Most important, though, is the use of aggregate data in their studies. Nothing is given in the Zeckhauser statistics on the kinds of injuries, for example. Rates are not stratified according to to industry, or whether they received an inspection or not, or whether they are for serious or not-so-serious injuries. For example, the overall rate of injury might stay steady if the rate goes down for industries with many OSHA inspections while the rate goes up for industries OSHA never gets to.

Two studies that have considered and accounted for some of these problems have found that, even in its infancy, OSHA had a positive impact in reducing injury rates. Correcting for the first error cited above, John Mendeloff used historical data to predict what injury rates would have been in the absence of OSHA. He found that "... the rates for the accident type most related to standards (caught-in-machine injuries) is significantly lower than predicted after 1972, while the rate for the type least related to standards (strains and over-exertions) is higher than predicted."[277] The lost-workday injury rate in California manufacturing, then, was 2-3% below what it would have been in the absence of OSHA.[278] Fatalities were reduced by 5%.[279] Extrapolating these rates nationally would mean a reduction of 350 deaths, and the avoidance of 40,000-60,000 injuries a year.[280]

The other study, also conducted by Robert Stewart Smith, concentrates just on those plants where inspections had taken place because "it is not at all clear that industries with high inspection rates are sufficiently comparable to those with low inspection rates to enable valid comparisons."[281] He also distinguished between plants that were inspected early in the year from those that were inspected later on, so as to isolate the effect of inspection from what would have occurred in any case. Smith finds that, associated with OSHA inspections, there was a decline in the injury rate, particularly in 1973. results imply a steady reduction of about 16% associated with inspections early in 1973, around a 5% reduction for 1974 inspections, and a lag of about 3 1/2 months in effective hazard abatement.[282] Such percentages translate into 144,000 - 450,000 injuries averted for a year of 180,000 inspections.[282a]

Smith notes two possible explanations for the decline in inspection effectiveness from 1973 to 1974. One is that the severity of injuries in the latter year declined as OSHA had a policy of inspecting the most hazardous workplaces first. The second hypothesis is that the number of federal compliance officers jumped 41% during the period "... and the inexperience of these officers may well have diluted the average productivity of OSHA's compliance staff during 1974."[283]

These results are significant. John Mendeloff estimates that the minimum estimates of the average social losses of disabling injuries range from $6,700 - $10,200 in 1975 dollars. Using the upper estimate for 1978 dollars, benefits from OSHA's safety effort for his results range between $408 million - $610 million annually, not counting the effect on fatalities. Applying the same estimate to Smith's results, the benefits are as high as $4.59 billion.[284] If Smith's own $1,500,000 figure (in 1973 dollars) is applied for the value of life in the workplace to the estimated 350 fatalities averted every year, then the annual benefit from OSHA's safety program alone is well over $5 billion.

Health-- Neither the Mendeloff nor Smith Studies attempt to assess OSHA's impact in the area of occupational disease. As Smith states, "because of data quality problems, OSHA's impact on occupational disease cannot be estimated."[285] Problems in methodology -- how to weigh benefits of standards that aren't realized for years after implementation, for example -- have been previously discussed. Yet OSHA would be expected to have its greatest impact in the area of occupational health since the problem is so pervasive and OSHA's standard-setting effort has emphasized this area.

To be sure, as Nichols and Zeckhauser state, "No matter how fast OSHA writes health standards, however, it is unlikely to cover more than a tiny fraction of the tens of thousands of toxic substances listed by NIOSH."[286] As of today, about one out of every ten of the 28,000 toxic substances in the workplace are suspected carcinogens; OSHA has promulgated standards for twenty-one and two other substances, lead and cotton dust. And a recent GAO report concluded that "it will take OSHA 100 years to establish standards for existing substances."[287] Hundreds of new substances are developed each year.

The enormity of the task and OSHA's slow pace have persuaded some critics that the agency should stay out of this area. But that police can't catch all burglars shouldn't mean they should therefore catch none. First, the agency has targeted the most dangerous substances as priorities: asbestos, lead, vinyl chloride, and cotton dust. Second, it is important to realize that every effort has met with resistance by industry and by economists on the Council on Wage and Price Stability (COWPS) and/or the Regulatory Analysis Review Group (RARG). If OSHA has dragged its feet, it perhaps is because R. Jeffrey Smith's analysis, in a recent Science article, is not far off the mark:

> The main actors are often reluctant to take the first step in restricting exposure to toxic substances because they know what happens next: outside pressure is applied, both directly and through Congress, followed inevitably by a lawsuit, which may expose deficiencies in the original law."[288]

Illustration of this hostile environment include the struggles over benzene, cotton dust and asbestos.

The court tangle over the benzene standard threatens to jeopardize OSHA's entire effort to protect workers from dangerous substances. Benzene is a widely used industrial chemical known to cause leukemia and other fatal blood disorders. OSHA wanted to go from 10 ppm to 1 ppm because scientific studies demonstrated conclusively that workers exposed to benzene at low levels contract leukemia at ten to twenty times the rate of the general population.[289] 600,000 workers in rubber, chemical, plastics, and other industries were to be protected under the proposal -- until the petroleum industry brought the agency to court over it two years ago. On October 5, 1978, a federal appeals court in Louisiana struck down the standard because OSHA failed to show a "reasonable relationship" between costs and anticipated benefits. "Without an estimate of benefits supported by substantial evidence," the court argued, OSHA is unable to justify a finding that the benefits to be realized from the standard bear a reasonable relationship to its one-half billion dollar price tag."[290] OSHA maintains that its statutory mandate requires no economic test, only that rules be "reasonably necessary" to provide a healthy and safe workplace and "feasible" for industry to meet. The Supreme Court has agreed to review the case.* Anthony Mazzocchi, vice president of the Oil, Chemical, and Atomic Workers International Union, maintains that the legal delay is disastrous for workers: "The court order leaves us with the body-in-the-morgue method of proof. They're saying that we should put the bodies of 400 men on the court house steps to prove our case... It's a question of who pays. And the courts have placed themselves firmly on the side of the corporation."[291]

*Six months before the benzene decision, OSHA successfully defended its coke oven emmissions requirement before a federal appeals court in Philadelphia. Exposure to emissions from coke ovens causes lung cancer, as much as ten times the rate of other steelworkers, and also increases the risk of kidney and bladder cancer. 29,000 coke plant workers were to be protected by the standard promulgated by OSHA in October, 1976. The steel industry lost the case on the basis of its "financial capability." If the benzene decision is affirmed, the agency fears that the crucial factor will not be financial capability, but a cost/benefit test.

Even if some measurement of benefits were possible, placing a dollar value on that benefit would pose all of the difficulties discussed previously. These difficulties, however, have not restrained the economic analysis groups within the administration -- COWPS, RARG, and CEA (Council of Economic Advisors) -- that pelt OSHA relentlessly with critical cost-benefit studies. It was curious, for example, how the Council warned about a $2.50/ton price rise because of the coke standard, at the same time the steel industry upped its price by $6.00 per ton, says Steven Kelman, "with little murmur from the Council on Wage and Price Stability."[292] Nor do these groups, consistent with the prevailing political mood about inflation, ever urge the *strengthening* of standards where the benefits exceed the costs and which are *deflationary*.

The cotton dust controversy especially reveals the purpose and tactics of the economic analysis groups. That cotton dust causes respiratory problems was known as early as the 1700's.[293] The perils to the textile worker from exposure to cotton dust were isolated in the 1930's when a British researcher documented the symptoms of byssinosis, or what in 1969 Ralph Nader called "brown lung" : chest tightness, wheezing, coughing, and breathlessness which leads to permanent narrowing of the airways.[294] Of the 560,000 production workers in the cotton industry today, 84,000 suffer from respiratory ailments due to the disease, and at least 35,000 workers that are still employed or retired have already been permanently disabled by byssinosis.[295]

While brown lung was on the list for workman's compensation in 1942 in Great Britain, the *American Textile Reporter*, industry's trade journal, was as emphatic in its denial of the disease in 1969 as it was in its racist commentary:

> We are particularly intrigued by the term "byssinosis", a thing thought up by venal doctors who attended last year's ILO meetings in Africa, where inferior races are bound to be inflicted by now diseases more superior people defeated years ago.[296]

Ten years later, former Tennessee Governor Ray Blanton has come up with a different-quip: "Breathing cotton dust fibre is like breathing carrot juice -- it doesn't feel good, but it won't hurt you."[297]

Under the Walsh-Healy Act, the government limited exposure to 500 micrograms per cubic meter (ug/m$^3$), still in effect today. The need for a stiffer requirement became obvious as studies continued.[298] OSHA selected it as one of the hazards targeted for special compliance when the agency was created. But the industry had an "in" with the Nixon administration in 1972 when talk of a cotton dust standard began to develop. George Guenther, Assistant Secretary of Labor, promised that no action would be taken on cotton dust.[299] Subsequently, the textile magnates contributed $1 million to Nixon's re-election effort, one-third of which came from Roger Milliken, president of the textile firm Deering-Milliken.[300]

Pressure for revitalization of the cotton dust standard came in 1976 from Ralph Nader's Public Citizen and the textile worker's union. Although NIOSH recommended a level of 100 to 200 ug/m$^3$, a standard that would have eliminated as many as 46,320 cases of byssinosis,[301] OSHA responded, after its own extensive review, with a standard of 350 ug/m$^3$ immediately and 200 ug/m$^3$ to be met within seven years.

The final standard, which the textile industry has blocked in court, would eliminate a minimum of 23,490 cases of byssinosis at a cost of $7,540 to $8,658 per case, according to a Department of Labor analysis.[302] This same analysis estimates the quantified benefits of the standard — using $100,852 for average expense per case of brown lung disability — at $7.51 billion.[303]

It admits that this is a conservative estimate,

> since it does not include losses to workers associated with premature death, pain and suffering, and other intangibles; or the expense to firms for increased health benefits, workers' compensation premiums, excess absenteeism, worker turnover, and reduced productivity; nor the costs externalized to society through transfer payments, including the cost of administering related government programs.[304]

Using a discount rate of 10%, this analysis translates the static $7.5 billion figure into an annual benefit of $751 million, more than $540 million greater than the estimate for the upper bound of annual costs.[305]

But the intervention by Charles Schultze, Barry Bosworth, and the Regulatory Analysis Review Group, demonstrated that George Guenther's tactic had merely acquired a new replacement. OSHA was to issue its final standard on May 31, 1978, two years after the public comment period was opened and after critical economic analysis by the Council on Wage and Price Stability. On May 24, 1978, however, the *New York Times* obtained a private memorandum, signed by Charles Schultze and sent to the President, that urged a delay of the standard until less inflationary alternatives were considered. The option posed by Bosworth, in a memorandum to the executive committee of the Regulatory Analysis Review Group, was to substitute respirators for a less stiff engineering standard. But OSHA noted that

> the need for sophisticated respirators and high administrative costs would likely inflate costs far beyond initial estimates. Wearing respirators for even a short time is fatiguing, uncomfortable, and stressful, especially in a hot, humid textile mill. Respirators are especially unsuited for workers who cannot bear the extra resistance of such devices precisely because they suffer from respiratory problems.[306]

Eventually, after labor and consumer group protests and a court challenge, President Carter did reverse his stance -- although the industry was given an extra four years to comply. And industry's court challenge to the standard over costs has resulted in a U.S. Court of Appeals order, still in effect, to stay implementation of the final standard.

Asbestosis, a respiratory disease which results from inhalation of asbestos fiber, is sometimes referred to as "white lung," but the sobriquet has nothing to do with the degree of purity with which industry has attempted to combat the disease. Exposure to asbestos also causes lung cancer and cancer of the pleural lining of the chest -- mesothelioma.[307]

Dr. Irving Selikoff of Mt. Sinai School of Medicine has been in the forefront in investigating asbestos-associated disease in the United States since the early sixties. He discovered that the properties of asbestos fiber are not unlike other toxic substances in the workplace: a latency period between exposure and onset of cancer of 15, 25, 35, or more years; brief exposure can be dangerous (investigations of employees at one asbestos plant showed marked increase risk of cancer with as little as one month of employment); direct exposure is also unnecessary (mesothelioma -- a rare chest cancer -- has been found among contacts of asbestos workers as well as people living within a quarter of a mile or so of asbestos plants).[308]

According to the National Cancer Institute and the National Institute of Environmental Health Science, workplace inhalation of asbestos fiber alone will be responsible for a cancer epidemic over the next thirty to thirty-five years -- an estimated 2.5 million premature cancer deaths at the rate of 67,000 per year.[309] This figure represents 17% of all cancer in the United States. Despite these grave implications, court documents show that Johns-Manville, Raysbestos Manhattan, and the rest of the asbestos industry have for years concealed the results of tests run over four decades ago confirming the respiratory hazards of asbestos fiber.[310] The $2 billion in law suits which have been brought against the industry barely covers the extra profit netted by this industry for not protecting workers.[311] Alice Rivlin, head of the Congressional Budget Office, states that nobody could coax her into an asbestos plant at any price:

> It was the question of asbestos and whether you could compensate individuals for the risk of incurring cancer. I don't think anyone could compensate me enough to be willing to undergo that risk.[312]

Before the recent revelations about widespread exposure of shipbuilders to asbestos fiber, Russell Settle of the University of Delaware performed a cost-benefit analysis of an asbestos standard using a discounted future earnings approach. In 1970 dollars, he found that the standard, if it saved just 2,563 lives annually, would produce as much as $651.5 million in annual benefits.[313] But Dr. Selikoff, has speculated that close to twenty times the number of lives were jeopardized than Settle had reckoned. Settle agrees that his estimates would be much larger:

> Given all the recent information on exposure which wasn't known at that time, the costs (of no standard) would have been much larger. The estimates in the study therefore significently underestimate the benefits given.[314]

OSHA issued an asbestos standard on June 7, 1972, which gave manufacturers four years to bring asbestos dust levels down from 5 to 2 million fibers per cubic meter. Perceiving in 1975 that greater reduction was required to lessen worker risk, OSHA proposed a standard of 500,000 fibers per cubic meter. But industry had already moved to block the 1975 proposal when NIOSH determined that even if the limit were lowered to 100,000 fibers per cubic meter, asbestos dust would still increase the risks of cancer.[315] Rather than meet stiffer requirements, industry constructed new plants in Central and South American, sometimes even abandoning new plants in the United States.[316] One reporter from the Arizona Daily Star gave this description of one U.S.-based plant across the Mexican border:

> Asbestos waste clings to the fence that encloses the brick plant and is strewn across the dirt road behind the plant where the children walk to school. Inside, machinery that weaves yarn is caked with asbestos waste and the floor covered with debris. Workers in part of the factory do not wear respirators...[317]

Benefits of the present 90dB noise standard have been calculated from a discounted future earnings approach and a willingness to pay approach using a market surrogate. The study which employed the DFE approach calculated that decreased absenteeism and savings in worker's compensation benefits through a 90dB standard would produce $4.2 billion in measurable benefits.[318] Robert Stewart Smith's result for eliminating just the irritability component of noise is a range of $2.6-6.5 billion, and does not include the benefits derived from a 3% decrease in the probability of incurring hearing loss.[319] This latter benefit would have to be $10.9 billion to cover the estimated $13.5 billion cost of the standard if the low end of the irritability benefit is used, or $750 per worker. (14,332,999 manufacturing and utility workers would be protected.) If the upper end of the irritability benefit is used, which seems justified,* workers would have to be willing to pay $499 to avoid hearing loss to cover $7.0 billion in additional costs.

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*Robert Stewart Smith's evaluation of the occupational noise standard was based on evidence on property value differentials around airports. The resulting WTP of $60 to $150/per decibel to avoid irritation from noise was found in the 55-65 decibel range. Yet the damaging 85-110 dB level to which more than 14.3 million workers are presently subject, is as much as ten times as loud as the airport level (decibels are calibrated along a logarithmic scale). Smith proceeds to apply the airport benefit range to OSHA's standard in a strict linear fashion. No adjustment is made for the fact that airport noise may be intermittant, while workplace noise is more likely to be continuous. In fact, Smith feels that intermittant noise is more nerve- racking. The health benefits other than hearing which result from the standard are also neglected in the calculations, as are productivity gains. Smith also concentrates on just the permanent hearing loss due to occupational noise. But, Aage R. Møller, Research Professor and Director of the Division of Physiological Acoustics, the School of Medicine, University of Pittsburgh, has documented extensively the adverse effects of temporary hearing loss, or temporary threshold shift (TTS) due to noise exposure. These TTS's combine with other effects like tinnitus (ringing in the ears), vertigo, headache, and fatigue that can persist for sixty hours or more. These discomforts, which are experienced even below 85 dB, can ruin leisure time. "Even a slight impairment of hearing may result in a significant and irreversible reduction of the quality of life...," states Møller. Yet, these effects are not included in Smith's study.[319a]

while the actual amount is left to speculation, and Smith declares that the 719,100 workers that do incur hearing loss would not pay $10,000 to avoid a 100% chance of hearing loss, it is interesting to note that jury awards for partial hearing loss have gone as high as $30,000.[320]

Acknowledging that the 90dB standard is still not fully enforced, it seems reasonable tht the annual benefit realised in decreased irritability, averted hearing loss, productivity gains, and averted health damages from OSHA's noise standard is at least $650 million -- the upper end of Smith's range for the irritability benefit translated from a lump sum into a recurring annual benefit by using a 10% discount rate.

Thus the documented benefits for OSHA -- from the safety program ($5.1 billion), from just two standards in the toxic program ($1.4 billion), and from the noise standard ($650 million) -- can be conservatively put at $7.15 billion when the cotton dust standard takes effect. At present, the total minus the quantified benefits of the cotton dust standard is $6.4 billion.

### B. Environmental Protection Agency

The emission of sulphur compounds from electric power plants is responsible for an estimated 13,000 deaths, 45 million aggrevated heart and lung cases, and 6.8 million asthma attacks every year.[321] Earlier this year, it looked as if the Tennessee Valley Authority, spewing forth a million tons of the noxious sulphur dioxide gas a year from its coal-fired power plants (making it one of the worst offenders of the 1970 Clean Air Act standards), had reached a settlement with the Environmental Protection Agency. One official from the Senate Environmental and Public Works Committee called the $1 billion agreement "the single most important environmental action of the decade."[322]

But, as with strip mining rules, cotton dust regulations, smog standards and water cleanup rules, White House inflation-fighters had a different view.

In a letter responding to a complaint by a Consolidated Aluminum Co. official that the settlement would raise electricity rates, Barry Bosworth responded that the settlement "will impose an unnecessary cost burden on the residential and industrial users of electric power in the Tennessee Valley."[323] (It has been estimated that rates would have gone up by an estimated 4% for an area that pays the lowest power costs in the country.)[324] Bosworth's letter circulated in Tennessee and on January 30, twenty days after the letter was written, a U.S. Court judge in Nashville refused to approve the settlement until an economic impact statement was drafted.

Benefits: Air -- Lave and Eugene Seskin estimated that the attainment of the Clean Air Act goals for sulphur dioxide and Total Suspended Particulates (TSP) would reduce the mortality rate by 7% -- saving 125,000 lives every year.[325] They attached a price on life based on discounted future earnings to arrive at a yearly benefit of 23.3 billion for just the health benefits when the Clean Air Act Standards for particulates and sulphur compounds were attained.[326] A more recent study performed for the Environmental Protection Agency indicated that the health benefits from a 60% reduction in sulfates and particulates are in the range of $30.1 - $40.9 billion per year for the 1970 Urban Population.[327] The study placed values on life based on the willingness to pay estimates of Thaler, Rosen, and Robert Stewart Smith, which was several times the value applied by Lave and Seskin.[328] This multiplier effect was canceled out, however, by the much less dramatic impact that the EPA study found for air pollution on mortality.[329] The large disparity between the final estimates of the two studies stems predominantly from the assumption made by Lave and Seskin that the effect on morbidity -- acute and chronic illness -- would be the same as on mortality. By their own admission this was "certainly a very conservative assumption."[330]

While the goals set forth under the Clean Air Act for sulphur oxides and particulates have not been fully realized, there has been a considerable decline in sulphur dioxide and TSP concentrations. EPA reported in 1977 that only 2% of all monitoring sites show violations of the 24 hour $SO_2$ standard and 6% for the TSP standard.[331]

Sulphur oxides and particulates are only two of the five "criteria" pollutants established for control under the Clean Air Act. Automobiles are largely responsible for carbon monoxide, photochemical oxidants, and nitrogen oxide pollution, the remaining "criteria" pollutants. When any one of the five reaches a level which adversely affects human health, the Pollutant Standard Index (PSI) is above 100. In 1976, the PSI exceeded 100 on 2,334 days (for 16 cities) compared to 2,545 in 1973, an 8% improvement.[332] More important, perhaps, is the fact that severity of pollution declined even more dramatically -- the number of days when the PSI rose above 200 declined 29% during the same period.[333]

Of 43 cities, only two were dominated by TSP's and sulphur oxides, the stationary source pollutants. Carbon monoxide and oxidants predominated among the rest.[334] Obviously the automobile looms as the largest polluter of urban air, although stationary sources are responsible for some oxidant emission. Still, the effectiveness of auto emission standards is demonstrated by the decrease in severity and frequency of CO violations. The PSI for CO is 10 milligrams per cubic meter. The number of days when CO levels surged above 22 milligrams dropped to zero from 1973 to 1976, while violations in the range of 16-22 milligrams plummeted 60% during the same period.[335]

Benefits associated with these reductions in mobile source emissions are difficult to establish. A government task force in 1976 estimated the following impacts of oxidants in 1980: 1.7-1.8 million cases of eye discomfort, 33,000-36,000 aggravated heart and lung disease among the elderly, 2.5-2.7 million excess headaches, 510,000-570,000 additional cough, and 50,000-55,000 excess cases of chest discomfort.[336] Using $200,000 as the value of a life, the National Academy of Sciences estimated in 1974 that the morbidity effects associated with oxidants and the mortality effects associated with nitrogen oxide cost between $360 million and $3 billion annually.[337] Lave and Seskin estimate conservatively that control of mobile source pollutants would produce over $5 billion in annual benefits.[337a] In 1978 General Motors commissioned a study which concluded that the benefits of eliminated particulates, sulphur and nitrogen compounds, oxidants, and carbon monoxide come to as much as $31.5 billion.[338] This total included medical costs, earnings, and psychic costs. The bulk of benefits, it concluded, would be achieved by eliminating stationary source emissions.

Thus far, the discussion has centered on the primary effects of air pollution — the adverse effects on health. But damage to property, materials, vegetation, wildlife, and aesthetics -- secondary effects -- is extensive. In their study of six pairs of neighborhoods in the South Coast Air Basin in Southern California, Brookshire, et. al. uncovered a household's willingness to pay $42 per month for a 30% improvement in Ambient Air Quality.[339] That figure, representing both health and aesthetic benefits, was based on property differentials in the area. Using a survey approach, the result was compatible: $29 per month.[340] These figures translated into two thirds of a billion dollars to $1 billion in annual benefits for the South Coast Air Basin.[341] Indeed, this group of researchers concluded that henceforth, "aesthetic and morbidity effects may dominate the measure of benefits as opposed to previous emphasis on mortality health effects."[342] In 1974, the National Academy of Sciences appraised the total losses of materials due to mobile source emissions in 1970 at $1 billion.[343] Annual damage from stationary sources was also found to be substantial in other studies: paint, $1.2 billion; textiles, $2 billion; and metals, $1.45 billion.[344] EPA put the total loss from all sources in 1970 at $7.5 billion.[345]

*Water*--Very little work has been done in tabulating health benefits from water pollution control. One group of researchers, however, estimated for EPA that 60% of the $10.1 billion in damages attributable to water pollution in the U.S. was associated with the loss of water-based recreation opportunities.[346] Figures on marine fishing, public swimming, fresh water recreation and property values demonstrate that implementation of the Federal Water Pollution Control Act Amendments have netted substantial benefits. One study by the National Commission on Water Quality estimated that quantifiable benefits in these areas will amount to as much as $6.2 billion (in 1975 dollars) in 1985, while it was estimated that $3.4 billion in non-health benefits would be reaped in 1980 alone.[347]

*Solid Waste*--The cost of not regulating in the area of toxic chemicals and hazardous waste dumping runs into tens of billions of dollars. EPA estimates that the cost of cleanup for the more than 32,000 sites is over $50 billion.[348] There are not only the horror stories of negligent or callous firms, but also the story of EPA's neglect and ignorance of the problem. Woodrow and Christine Sterling, a couple from Toone, Tennessee, testified before a House Subcommittee on the state of their drinking water after it had become contaminated by toxic chemicals. Tests showed that the water was polluted with six potential carcinogens found in concentrations 2,400 times the safe level from 300,000 barrels of pesticide waste.

According to the Sterlings, the regional EPA office had known about the contamination for years and had not informed residents of the dangers. Forty-seven people in the area have now been informed that they will suffer from such longterm after effects as liver, kidney, and nerve damage.[349]

Unfortunately, the Toone case is not atypical. Of the 32,254 dump sites across the country which could cause damage to public health, 838 are listed as those which could cause significant and imminent hazards -- potential Love Canals. But, according to a "lesser-known" survey done by an EPA official, the latter figure may be as high as 27,500.[350] Riverside, California has been called "Love Canal of the West." Rainfall last year caused the Strongfellow landfill to overflow, spilling chemicals into the residential valley below which seeped into an elementary school. The $10 million in cleanup costs will not be born by the culpable company, which went bankrupt years ago. In Denver, a landfill catches on fire "fairly often." A landfill in New Bedford, Massachusetts has caused a fishing ban in the Paskamansett River. In Pontiac, Michigan, a spell of hot weather "could have set off an explosion which would have sent a toxic cloud sailing over the city's suburbs."[351]

EPA cites lack of funding as the reason for its laxity. Out of a $1.2 billion dollar budget, $25.2 million is allocated for hazardous waste.[352] A little more than half of that money is funneled directly into state Resource Conservation and Recovery Act (RCRA) programs. $6 million of that half was tagged for relief at Love Canal last year.[353]

But the administration's "anti-inflationary" infighters have applied pressure as well, this time from Office of Management and Budget. One official at that group stated, "We can't have the President declare an emergency [as he had done at Love Canal] every time one of these time bombs goes off."[354] And OMB has frozen funds which were earmarked for hazardous waste disposal. It has told EPA for example not to ask for the $10 million which Congress specially authorized for such purposes in 1977.[355]

But dismantling one of these "time bombs" is far less costly than trying to clean up after they go off. Proper waste disposal is the least costly route in the long-run, a phenomenon which eludes the cost-benefit snapshot. The figures cited in this short overview suggest that present damages from environment pollution are as high as $56 billion annually, not including solid waste damages. How much of these damages have been translated into benefits as a result of regulation is difficult to determine.

Subtracting selected costs of air and water pollution - medical expenditures and materials damage - from a hypothetical level had no pollution control been imposed after 1970, Thomas E. Waddell sets the current annual realized benefit from pollution control at $22.2 billion.[356] He estimates that by 1985, annual monetary benefits from pollution control will be $38 billion.*[357] Adding the $6.2 billion estimated by the National Commission on Water Quality for that year, yields a $44.2 billion total by 1985.

Waddell's figures are very conservative since they place no value on life, whether in terms of lost earnings or willingness to pay. They also ignore property damage, aesthetic damage, damages to wildlife and to the natual environment (ozone depletion in the stratosphere, green house effects of carbon dioxide buildup). As Wadell states, "an exercise like this is fraught with uncertainties, data gaps, and necessarily, many generalties. The investigator took a generally conservative posture throughout."[358]

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* This figure includes no benefits from control of water pollution.

## C. National Highway Traffic Safety Administration

The National Highway Traffic Safety Administration (NHTSA) was established in 1966, in the words of its Senate report, to meet "the compelling need for the strong automobile safety legislation which... lies embodied in those statistics: 1.6 million dead since the coming of the automobile; over 50,000 to die this year. And, unless the accelerating spiral of death is arrested, 100,000 Americans will die as a result of their cars in 1975."[359]

Yet, there were 46,880 highway fatalities in 1975, not 100,000.[360] Based on a comparison of deaths per mile driven in 1966 and today, over 100,000 Americans owe their lives to federal auto and highway regulation.[361] The number of lives saved in 1978 alone is conservatively put at 12,580.[361a] Employing NHTSA's own $359,000 figure for discounted future earnings, health costs, and other costs avoided per life saved, $4.5 billion has been netted in raw economic benefits from lives saved on the highway in 1978.

These substantial benefits of federal auto regulation are still dwarfed by the continuing costs of highway accidents. The sixth leading cause of death in the nation, and first among the population 44 and under, the auto still has the dubious distinction of heading the list of dangerous consumer products.[362] While the number of deaths per 100 million vehicle-miles continues to decline dramatically -- 3.25 in 1978 compared to 5.0 in 1970 and 5.48 in 1966 -- the highway toll rose above 50,000 in 1978, the first time in nearly a decade. NHTSA has tabulated the annual societal loss at over $48 billion in 1978, using the $359,000 figure cited above for fatality, records of lost earnings and medical costs for injury, and property damage estimates.[364] To date, no one has done a study of the psychological cost to families of the victims of crashes. Nor does this $48 billion figure include the more than $20 billion in unnecessary or fraudulent car repairs performed every year, according to NHTSA.[365] Yet such high costs and potential benefits have not been part of the dialogue over the costs of auto regulation. The impact of a death or crippling accident to both family and victim can be emotionally immense, though immeasurable.

Auto manufacturers have not merely neglected safety; they have shunned it. Their invocation of the belief that safety does not sell, that Ford tried it one time and it failed the test of the marketplace, is as frequent as it is simply wrong. Robert S. McNamara, Ford general manager in 1956, called an abrupt halt to the "lifeguard design" safety campaign that year because of its potential success, not its failure. The 1956 Ford offered a deep-dish steering wheel, safety door latches, padded seat-backs, and "swingaway" rear view mirrors as standard equipment. It also offered seat belts as an option -- the first time in the U.S. -- as well as padded dashes, padded sunvisors, and external rear-view mirror. The key to the story lies with GM's exertion of pressure on Ford management to relent so as to avert a public focus on the dangerous side of cars, according to Ralph Nader.

> The number-one auto giant was not without friends at high Ford management... These gentlemen understood the market power of General Motors... GM said stop and Ford literally screeched to a halt, with the afor-mentioned GM-Ford executives getting McNamara to switch gears to an advertising campaign that emphasized styling and performance rather than safety.[366]

The legend that "Ford sold safety -- and GM sold Chevys" was propogated by the fact that Chevrolet outsold Ford by 200,000 cars that year.[367] That gap was nothing new; Chevy outsold Ford by that much or more at least fourteen times since World War II.[368] That the gap was held to 200,000 in a year which witnessed a Chevy face-lift (Ford did not change style that year) is more significant. As John Jerome relates in his documentary of the auto industry, Ford could not keep up with the unexpected demand for the safety options:

> Ford had underestimated the demand for safety options so badly that dealers were unable to get many of the options that customers ordered, and the factory was back-ordered on safety equipment for several months of the year.[369]

The seat belt was the hottest selling option Ford ever had.

It would seem imprudent to take the position, flat out, that safety does not sell when 83% of the population in a Harris poll conducted for AMTRAK cited auto safety as a very important national transportation problem -- a higher percentage than any other transportation problem listed.[370] Sixty-three percent felt that *more* tax dollars should be spent on auto safety regulation.[371] Instead, industry has traditionally maintained that bad drivers cause accidents, not unsafe cars, and efforts to engineer in safety were therefore futile.

*Effectiveness*--University of Chicago economist Sam Peltzman recently attempted to resuscitate this "nut behind the wheel" thesis in his 1975 study on the effectiveness of the 1965 auto safety legislation.[372]

He finds that occupant fatalities have, in fact, declined since the passage of the auto safety act. But third party fatalities (pedestrians, bicyclists, and motorcyclists) rose during the same period, enough to compensate for the 15% decrease in occupant deaths which he attributes to NHTSA. The conclusion? All of the safety gadgets in the car give a false sense of security to the driver, states Peltzman. He therefore drives in a riskier fashion (to have more time to increase earnings) and is involved in more accidents resulting in the death of more non-occupants such as pedestrians. Under such a hypothesis, states Yale economist Richard Nelson, "almost any safety provision, no matter how effective if used and no matter how easy or automatic to use, would be offset, perhaps largely offset, by riskier driving."[373]

How does Peltzman arrive at such a conclusion? He uses aggregate data on accident rates from 1949 to 1965 to predict rates for 1966 to 1972. He finds that the actual rates, 1965-1972, were below the predicted rates, demonstrating that safety laws were effective in reducing occupant deaths. He assumes that the safety legislation was the only significant difference between the two periods and thus posits the "risky driving" hypothesis to explain the increase in third party fatalities. As with his drug study, Peltzman's auto study shows that a methodology that presumes regulation not to be worthwhile will prove that regulation is not worthwhile.

If Peltzman is to substantiate the claim that the safety legislation is the only difference between the pre-1965 and post 1965 eras, he must demonstrate that the model predicts accurately the accident rates prior to 1965. If the model cannot explain fully the accident rates between 1960 and 1965, Peltzman's hypothetical rate for post-legislation fatalities had there been no regulation would also be in error. In fact, his model is not predictive of fatality rates for the earlier period, so it cannot be used to estimate the effects of regulation.[374]

Part of the explanation for this failure is the neglect of certain historical events in constructing his variable. One variable used to predict fatality rates, for example, was a crash cost index which relied on the ratio of automobile insurance premiums in one year to losses paid in the previous year. The assumption was that the same proportion of losses is covered by insurance every year. But the number of state laws requiring mandatory insurance multiplied during the period, making that assumption invalid.[375]

Peltzman's use of aggregate data, glossing over crucial distinctions, also contributed to the predictive bias in his model. He multiplies the ratio described above, for example, by weighted averages of the Consumer Price Indices for auto repair services and other costs to complete this crash cost index variable. The Consumer Price Index, for auto repairs however, fails to reflect the types of property damage that result from crashes. Lubrication, washing, oil filter change, tune-up, carburetor overhaul, front-end alignment and wheel balancing are hardly as important as body work and frame repairs in the cost of accidents; yet, Peltzman includes them all and fails to distinguish which ones are responsible for changes in the variable.[376] Similarly, he treats all non-occupants--pedestrians, bicyclists, and motorcyclists--as a homogeneous group. As Leon S. Robertson of the Insurance Institute for Highway Safety states in his critique of the Peltzman study, "This equates persons crossing the traffic stream on foot at low speed with motorcyclists, who are intermixed in the traffic stream and traveling speeds in the same range..."[377]

Peltzman's neglect of crucial data also weakens the predictive value of his study. His alcohol variable ignores beer consumption and consequently places him in the position of minimizing the impact of alcohol consumption on accidents, contrary to the findings of more careful studies.[378] More important, perhaps, Peltzman's "risky driving" hypothesis clearly rests on the contention that drivers of regulated vehicles are the only ones that take greater risks. He fails to distinguish between pedestrian deaths involving cars subject to regulation from deaths by vehicles subject to little or no regulation. Other studies, which Peltzman chooses to ignore, show that pedestrian fatalities were no greater from vehicles subject to regulation than those without.[379]

Robertson constructed a modified model which corrects for Peltzman's most serious errors and which predicts, with accuracy, the accident rates prior to the 1965 legislation. Contrary to Peltzman, he finds that both occupant and non-occupant fatalities were reduced by safety regulation, the latter due mainly to motorcycle helmet laws.[380] By 1972, this study concludes, occupant fatalities were reduced by 20%.

Indeed, the implication of Peltzman's conclusion are bizarre. If one believes Peltzman's hypothesis, we should logically build steering columns in the shape of swords so as to deter 'risky driving'. In Richard Nelson's view, Peltzman's conclusion is probably ideologically predetermined. "By and large, the authors of this literature, as Peltzman, are supportive of a 'hands off' position. However, the conclusions seem more rooted in theoretical and ideological preconception than in known fact or relationship."[381]

Yet, the results of the Peltzman study, like those of Weidenbaum, are touted from conference podiums and in Senate hearings. Former director of the Council on Wage and Price Stability under President Ford, Robert Crandall, testified at one such hearing, "...but there's precious little evidence that the standards have reduced the highway death toll. One major study (Peltzman's) found that they had no effect on highway deaths."[382] (When probed later as to whether he would therefore abolish NHTSA, Crandall replied, "No, they just might be concentrating their efforts in the wrong places. And besides, Peltzman may be wrong.")[383]

Even manufacturers have conceded that auto safety regulation has been effective. In 1977, Henry Ford II said, "...We wouldn't have the kinds of safety built into automobiles that we have had unless there had been a federal law."[384] That year, seat belts, together with shoulder harnesses, saved an estimated 3,000 lives.[385] If belt usage increased from 20% to 70%, according to this NHTSA study, 8,400 more lives would be saved annually.[386] When it abandons the myth that safety does not sell, and acknowledges the fact that safety regulation is effective, industry retreats to that line of defense which it controls—cost estimates.

Cost Estimates—When Ford was designing the Pinto in the late sixties, for example, safety was not an issue—getting a share of the subcompact market was. As one Ford engineer put it, "Safety wasn't a popular subject around Ford in those days. With Lee [Iacocca, then Ford President] it was taboo. Whenever a problem was raised that meant delay on the Pinto, Lee would chomp on his cigar, look out the window and say, 'read the product objectives and get back to work.'"[387] On March 1, 1979, Mr. Iacocca, expressed his views on regulation more definitively; "...it is seriously retarding scientific progress, contributing to inflation, damaging competition, costing American workers their jobs and crippling American business in the world marketplace."[388] But then, the industry has usually taken an unrelentingly opposing position to any regulation that interferes with unfettered managerial judgment. States NHTSA head, Joan Claybrook,

> The Big Three auto companies fought California's and Washington's modest air pollution efforts. They still fight auto safety legislation such as the proposal for passive restraint systems, and they resist major vehicle recalls. The point is clear; their credibility is not high.[389]

Nor is that of their economist supporters. For example, the flaws in Murray Weidenbaum's $430 estimate for the "costs" of auto safety regulation represent a scaled down version of the bias of his entire study.

As briefly mentioned earlier, Weidenbaum uses Bureau of Labor Statistics data in a way which gets a stamp of disapproval even from the staff at BLS. BLS reports the year-to-year price changes for automobiles, including price changes resulting from compliance with emission, safety, and fuel economy standards. Since the latter are considered by the Bureau to be quality improvements, they are separated from inflationary price hikes. In addition, figures are computed and intended for use on an annual basis. Undaunted, Weidenbaum sums the annual figures, bloats them further by adjusting for inflation, and comes up with his grand sum of $666, $430 for safety standards and the remainder for fuel-economy and pollution control regulations.

Yet, the figures cannot be summed linearly because not all of the safety equipment introduced in 1968 are required on 1970 cars. "For instance," states Barry Felrice of NHTSA in a letter to Weidenbaum, "your figure includes a cost for a seat belt interlock which is not required on 1977 models. Therefore, your figure includes a cost for an item which is gone but apparently not forgotten in your economic analysis."[390] Not only does he include this fictional cost of installation, but also includes a cost for its removal![391] Another reason why the figures cannot be summed is that many safety features, like the bumper standard, replaced earlier standards. Weidenbaum proceeds to commit the error of double-counting the cost of bumper standard, once for the old one and once for its replacement.[392]

Weidenbaum ignores the learning curve. As industry engineers find more efficient ways of integrating it into the productin process, the cost of a standard usually goes down in the years following its introduction. Weidenbaum's continuing estimate for bumpers, then, reflects the first-year cost of meeting the standard before the use of lighter and less costly designs.[393] In fact, as a result of NHTSA's stringent bumper standard, consumers will save an estimated $110 in repair costs alone over the life of the vehicle.*[394] Fuel economy and damageability standards for bumpers have worked in tandem rather than in conflict, as industry originally contended. A recent NHTSA study found that 1979 bumper systems weighed thirty-five pounds less than 1973-1974 systems when the bumper standard first took effect. Such bumpers are not only stronger, but cheaper—by $7 per car.

BLS data is based on figures quoted from auto manufacturers. These figures are arrived at through a cost-base pricing scheme which includes a hefty profit for the industry, and does not reflect the true cost of compliance. When asked how much could be trimmed from the price of new cars by stripping the safety standards from present models, auto manufacturers responded with an $80 figure in 1976 dollars, not $430.*[395]

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* Auto manufacturers have little incentive to lower repair costs. These are costs that never figure into the sticker price, but do find their way into consumer cost accounts.

After correcting for many of the pitfalls in Weidenbaum's estimate, NHTSA has concluded that its safety standards add $250 (which still includes dealer profit), 42% less than the Weidenbaum figure.[397] The extra $500 which consumers will pay for the bumper, restraint, and fuel economy standards that are slated to go into effect by 1984 will be fully recouped through added savings—on gasoline and bumper repairs—in just two years after purchase.[398] Over the lifetime of a 1985 vehicles, according to NHTSA, consumers will save $1500 when compared with a 1978 model year vehicle. Such a savings translates into $16.5 billion per year (assuming 11 million new cars every year) beginning in 1985. Net benefits, in other words, are $11 billion per year.

The cost of industry's delay of such benefits enters Weidenbaum's ledger as often as he totes up benefits--not at all. In fact, he wrongly attributes to government regulation costs, like the interlock system, which rightly belong in a column defined "costs of industry lobbying efforts and delay."** For if it weren't for the interlock interlude advocated by the auto industry, consumers would have had the benefits of the passive restraint in the early seventies when it was originally slated to go into effect.

The origins of the passive restraint actually go back much further. Between 1952 and 1955, four patents were issued on the air bag.[399] In 1958, GM was showing films to its staff of crash tests with air bag prototypes.[400] A joint

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*This point is nicely illustrated by the cost differentials before and after removal of the interlock system. The Bureau of Labor Statistics information supplied by the auto industry indicated that the average retail price of the interlock system was $46.80 per car. But GM announced a price reduction of only $13.00 per car when the system was removed.[396] Ford Motor Company and Chrysler Corporation did not lower prices at all.[396a]

**Weidenbaum also wrongly attributes to "regulatory expenditure" NHTSA's entire $250 million budget when three-fourths of the agency's budget is ear-marked for state grant-in-aid programs, hardly a "regulatory expenditure."

Ford-Eaton report in early 1968 concluded that the system had demonstrated high potential to reduce occupant injuries during vehicle impact.[401] In July, 1969, the Federal Highway Administration published an advanced Notice of Proposed Rulemaking which tentatively placed the installmnet of air bags on all passenger vehicles, trucks, and buses no later than January 1, 1972. Subsequent to public meeting where all of the large automakers made statements, NHTSA filed proposed "standard 208," which put the effective date for passenger cars one year back, to January, 1973.

On May 11, 1970, GM President Edward Cole addressed an International Conference on Passive Restraints; "The development of passive restraints for automobile occupants should be a top priority in our national efforts to reduce highway deaths and injuries."[402] GM announced later that year that it was in he the final stages of production design so that all 1975 model passenger cars and light trucks would have passive restraints. In 1975 and 1976, in fact, GM had begun offering airbags on certain models.[403] Yet in 1977, after Ed Cole retired, GM dropped the air bag option from its cars.

Despite assurances from suppliers in 1971 that they could meet the specifications of "standard 208," including the deadlines, some auto manufacturers like Chrysler and Ford applied pressure to NHTSA through the White House to delay the standard. Thus was born that buzzing bane to consumers, the ignition interlock, which was suggested by Henry Ford II as a substitute and successfully put the effective date for air bags back to 1976. Some adverse public reaction to Ford's "better idea" prompted Congress to step in and prohibit the agency from requiring the interlock. It also specified additional procedures that had to be followed before air bags could be required. Further intervention by auto companies--Chrysler won a suit over NHTSA's poorly defined specification for a test dummy, and the industry persuaded former Transportation Secretary Brock Adams to phase in the standard--has pushed the passive restraint system back to the 1984 model year before all size cars would be so equipped.

The industry delay translates into 9,000 lives lost and thousands more injuries every year once all cars have automatic restraints.* An air bag on just the driver's side would produce societal benefits--averted production loss and medical costs--of $3.5 billion a year once all cars are fitted, according to NHTSA.[404] Industry delay in other words has cost billions of dollars and thousands of deaths.

At an average cost per vehicle of $150-200 for the air bag and $25.00 for the passive belt system, according to NHTSA, just economic benefits for passive restraints are at least twice the cost.[405] Indeed, upon its own review of passive restraints, the Council on Wage and Price Stability stated "...the available economic analysis appears to support developing a passive performance standard."[406]

Recalls--Cost figures for regulation like Murray Weidenbaum's figure also neglect the cost of industry defects, triggering recalls of 65 million new cars since 1966--or an average of 60% of all new cars sold during the period.[407] A closer look at two recent examples of auto industry judgment--Firestone 500s and Pinto--indicates why regulation can substantially cut the costs of accidents through recalls and the increased compliance with safety standards that recalls encourage.

"Firestone '500' --the 'World of Tires' is proving to be a real attraction." So begins a Firestone publication to stockholders, Perspective '79. An update on the recall of the Firestone "500"? Hardly. "World of Tires" is an exhibition of tire history which toured a good part of the United States on two forty foot trailers. Meanwhile, millions of customers were still using tires which, unbeknownst to them, were unsafe and defective. Firestone is obviously very selective in how it distributes its $28 million in annual advertising expenditures.[409] For its advertising and exhibition nowhere mention how at least 41 people had died and another 65 were injured[410] because cars were fitted with their steel belted radial tires that were prone to failure due to tread separation and belt separation from the tire -- a failure the company was aware of. In November, 1972, Firestone Development Chief Robertson wrote to Mr. Di Federico, then head of North American Operations and later to become president of the $4.4 billion dollar multinational corporation, during the Firestone "500" episode: "We are badly in need of an improvement in belt separation performance, particularly of General Motors, where we are in danger of being cut off by Chevrolet because of Separation Failures."[411]

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*According to former GM Vice-President John DeLorean, a delay of just three years in the introduction of front seat air bags results in 37,000 extra deaths and more than $18.6 billion in societal loss from otherwise avoidable injuries and fatalities.[403a]

Complaints filtered in from executives of other companies which placed their own brand on Firestone tires -- Montgomery Ward, Shell, and Atlas.[412] Atlas eventually terminated their contract, frustrated over the frequency of consumer complaints.[413] The "adjustment rate," the number of tires returned as a percentage sold, was 17.5% for the "500".[413a] Goodyear's highest adjustment rate for 1975-1977 was 2.9%[414]

But Firestone unrelentlessly contended in public that failure was the result of consumer neglect and abuse. John F. Floberg, Vice President and General Counsel even testified before a congressional committee that the adjustment rate was a subject of envy among tire companies -- a higher rate meant higher class and choosier customers.[415]

On July 9, 1978, after an extensive seven month investigation, including a survey involving 6,000 reports and documenting 14,000 individual tire failures, 19 deaths, more than 50 injuries, and hundreds of property damage accidents, NHTSA made its initial determination: the "500" were defective and the 8 million still in use should be recalled.[416]

But for NHTSA, information was a scarce commodity. Firestone delayed the release of their own data on complaints, lawsuits, and changes in method of manufacture -- delays inspired according to auto safety critics by the $1.7 million per week saved by the firm from tires that were wearing out and wouldn't have to be recalled.[417]

Firestone's willful, halfhearted attempt to compensate consumers -- confusing directions to retailers, spurious distinctions between partial and full refunds -- demonstrated that the "invisible hand" of laissez-faire capitalism may not adequately ensure the safety of consumers. Even Fortune, not known for its pro-regulatory bias, felt that Firestone had not handled this "fracas" well:

> One could expect a company convinced of its rectitude to cooperate fully with the government. But Firestone has repeatedly tried to thwart investigation of its tire, and has publicly impugned the motives of the investigators as well. In the process, it has simply prolonged and intensified its ordeal.418

Pinto and Bobcat--The Firestone incident is rivaled, perhaps, only by Ford's fiasco with Pinto and Bobcat. It was not long after the car hit the market that Ford's advertising firm, J. Walter Thompson, found it propitious to remove a particularly sensitive phrase from its radio spot: "Pinto leaves you with that warm feeling."[419] In the September/October 1977 issue of Mother Jones, Mark Dowie revealed how the gas tank on 1.9 million of these cars built between 1971 and 1976 -- six inches away from the bumper -- made it susceptible to puncture by protruding bolts on its differential housing when hit in a rear-end collision. "Now all you need is a spark from a cigarette, ignition, or scraping metal, and both cars would be engulfed in flames."[420] Worse yet, the car doors jammed upon collision, so passengers had no escape. Dowie estimated, conservatively, that the number of deaths resulting from "Pinto madness" ranged from 500 to 900.[421]

Like Firestone, Ford was well aware of the defect in the car during the engineering stage. In 1969, at a top-secret test site, the gas tank ruptured in every trial over 25 MPH.[422] And a one dollar plastic baffle and a rubber barrier produced by Goodyear were both found to be effective in tempering the explosion.[423] But Ford conducted its own cost-benefit analysis before Pinto ever reached the dealers and decided against any safety shield. In an internal company memorandum, the benefit was placed at 180 lives a year saved at $200,725 each, rounded off to $200,000. Added to that base was an equal number of burns avoided at $67,000 a piece and 2,100 fewer vehicles burnt for a grand total of $48.5 million. The company estimated that the shield would cost about $11 per car for a total cost of $135 million.[424] Not only does the analysis suffer from all the typical problems of cost-benefit analysis — putting a price on life, inability to deal with uncertainty, dynamic effects -- but it was common knowledge that the number of burns, for example, would be many times higher than the number of deaths. Also, the plastic shield would not cost $11 per car, but $1.00. Goodyear's rubber "fix" cost $5.08.[425]

While law suits mounted against the auto company, Ford fought vigorously against standard 301 which would have assured fuel tank integrity.*[426] Herbert L. Misch, Vice President of Environmental Safety for Ford, issued a response to Dowie's article, "Contrary to allegations, there is no serious fire hazard in the fuel system of the Pinto, nor are any Pinto models exceptionally vulnerable to rear-impact collisions."[427] When it had finally completed its intensive investigation on May 8, 1978, NHTSA disagreed; "... rear-end collisions on Pinto produce massive fuel leaks due to puncture or tearing of the fuel tank and separation of the filter pipe from the tank."[428] One month later, an agreement was reached with Ford to recall its fleet of subcompacts built between 1971 and 1976; the "fix", according to Ford, costs $20 to $30 per car, many times what preventive safety engineering would have cost initially.[429]

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*The 1977 Pinto had the plastic shield as standard equipment because Standard 301 was implemented in 1976 over the objection of Ford.

Benefits -- An Assessment--Then Secretary of Transportation Brock Adams, in December, 1978, called for a "reinventing" of the automobile.[430] To some extent, that has already been done:

> The readily-producible RSV (Research Safety Vehicle) is designed to provide frontal and rear crash protection in barrier impacts up to 50 mph, the equivalent of hitting a parked car at 100 mph. It offers passengers protection in car-to-car impacts up to 45 mph, protection to pedestrians when they are struck at speeds up to 20 mph, and low-speed damage protection.... The entire front end, made of soft polyurethane, weighs only 31 pounds....[431]

The future of the Research Safety Vehicle will rest not only with the aggressiveness of NHTSA, but also on foreign manufacturers who have been instrumental in "moving" the domestics. The stratified charge engine was invented in America but developed overseas by Honda. Volkswagen was first with the passive belt. Volvo was first with shoulder harnesses, and is the least polluting vehicle on California's Air Resources Board list.[432] Foreign producers have also pushed the domestic companies on smaller and more fuel efficient cars. "If under these regulatory conditions foreign companies can compete here," asks Joan Claybrook, the administrator of NHTSA, "why is it our companies cannot?"[433]

Benefits from auto regulation have already been substantial. The aggregate monetary benefit from averted injury every year is at least one-third that of averted fatality, according to NHTSA.[434] Added to the

$4.5 billion documented at the start of this section, a monetary benefit for NHTSA regulation for 1978 can be conservatively put at $6 billion. This figure does not reflect the reduction in property damage due to highway redesign -- less collisions -- or damageability standards. With the passive restraint, the comparable figure for 1985 would be $9.5 billion. The $16.5 billion netted every year from fuel economy and crash-resistant bumpers starting in 1984 would make that total $26 billion for 1985.

## D. Food and Drug Administration

Between thirteen and fourteen million people are placed on medication each week by physicians in the United States. More than $7 billion is spent on the one and a half billion prescriptions written every year -- an average of 5.7 prescriptions for every man, woman, and child in the Nation.[436] Yet, according to an HEW Task Force Report in February, 1969, as much as 25% of such drug therapy, costing $1 billion to $2 billion every year, is ineffective.[437] Some of this waste is due to false claims of manufacturers. A National Academy of Sciences study on the effectiveness of 4,300 FDA approved drugs on the market between 1938 and 1962 -- representative of 80% of all drugs on the market -- revealed that just 41% could demonstrate effectiveness for one or more of their claims,[438] while only 10% could demonstrate effectiveness for all of their claims.[439] Of 16,000 claims, supporting evidence could be found for only 19%.

Resource waste in the production and distribution of ineffective drugs represents only a fraction of the economic costs of drug overuse and incorrect use because there is no such thing as a "safe" drug. The FDA warns that,

> ... every medication has the potential to cause some unwanted effects in some people. The more powerful the drug--and prescription drugs are generally more powerful than those sold over the counter--the greater potential for an adverse reaction.[441]

One and a half million people are admitted to hospitals every year because of reactions caused by drugs. Of those already hospitalized, 18-30% have a drug reaction which ultimately doubles the length of their stay.[442] All tolled, about 1/7 of all hospital days is devoted to the care of drug toxicity at an estimated cost of over $3 billion every year.[443] The toll in human life from drug reactions is anywhere from 30,000 to 100,000 each year.[444] According to the Senate Health Subcommittee, 80% of such reactions could be eliminated if doctors were better informed, with a savings of more than $1 billion annually.[445] Senator Kennedy remarked at a hearing in [illegible] that the $1 billion which pharmaceutical companies spend every year to promote their products -- or about $5,000 per prescribing doctor -- left "too many physicians prescribing too many drugs on the basis of too little information."[446] (Today, the industry spends $1.3 billion, a sum which former Secretary of Health, Education, and Welfare, Joseph A. Califano, Jr., has cited as six times the entire annual Federal expenditure for the Nation's 114 medical schools.)[447] As much as 85% of this advertising effort, according to Kennedy, could be regarded as economic waste.[448]

Drugs are not only over-used, they are over-priced -- the result of the pharmaceutical industry's market power.

First, there is the exploitation of brand names for supra-normal profit. On the average, each drug has thirty different names.[449] One of the 22 brand names for prednisone for example, several years ago went for $170 per bottle, seven times the price for the generic counterpart.[450] Buying generically for just thirteen drugs nets savings in government programs of $10 million. Since the programs represent only 9% of the national market, the savings to the government and taxpayers if drugs were purchased generically would be substantial.[451] A report by the Bureau of Consumer Protection of the Federal Trade Commission cited several saving calculations in the $200-$400 million range when lower cost generic alternatives were used.[452]

A second aspect of the pharmaceutical industry's exercise of market power concerns patent protection. Much of the innovative effort prior to the 1962 amendments to the Food, Drug, and Cosmetic Act were directed towards retaining patent profits by developing redundant variations on older drugs. Indeed, in some cases, the result was to lessen the value of the drug. Tetracycline taken alone, for example, is not only more effective than Panalba, a combination drug (tetracycline and novobiocin) first marketed by Upjohn in 1957, but it is also safer. Upjohn knew that this drug, its fifth largest seller grossing over $18 million each year, was both hazardous and ineffective from five studies conducted by the company between 1959 and 1960. Yet, none of these findings were summarized in the material submitted to FDA upon request in 1964.[453] By March, 1970, there were twelve documented fatalities tied to Panalba. Extrapolation to the population at large then indicated that 475,000 customers had contracted blood dyscrasias, 9,250,000 had hypersensitive reactions, and 475,000 had experienced liver disturbances from ingestion of Panalba. When FDA moved to take the drug off the market, Upjohn filed suit. The subsequent fifteen month delay before the drug was removed was worth $22.5 million for Upjohn in extra Panalba sales.[454]

Passed in the wake of the thalidomide tragedy abroad, the 1962 amendments to the Food, Drug, and Cosmetic Act were designed to alleviate many of the pharmaceutical abuses outlined above. Manufacturers not only had to provide proof of safety, as the 1938 amendments required, but also "substantial evidence" of efficacy in meeting claims. Rather than automatic clearance of a drug if FDA did not act within sixty days on a New Drug Application, the agency was required to give positive approval.

More stringent requirements were also placed on human testing of drugs during the Investigational New Drug (IND) stage. Before an NDA is filed, the FDA must have tests from industry showing that further tests with humans would be safe. Finally, the Act provided for retroactive enforcement on drugs already on the market, pending a comprehensive review by the National Academy of Sciences, the results of which were cited at the beginning of this section.

The effectiveness of the "Harris-Kefauver" Amendments has been challenged by University of Chicago economist Sam Peltzman.[455] He concludes that the delays caused by the "proof of efficacy" requirements and the higher costs required to obtain approval of new drugs outweighed the relatively minor benefits which could be attributed to the Act. The result was a net loss to the consumer of $250-$350 million annually or the equivalent of a 5%-10% tax on new drugs. "It sounds shocking to say that the net effect of having some thalidomides is a gain, but that's unfortunately the way the world works," stated Peltzman at a Senate hearing.[456] As with his auto study, Peltzman's assumptions and methodology -- which have provoked sharp criticism from the FDA, Senate, and other economists -- bear closer scrutiny.

Economists contend that the demand for consumer purchases reflect the true preferences of consumers. If they purchase ineffective drugs, their demand is uninformed and artificially high. Without the amendments, states Peltzman, consumers would "learn by experience" that their purchases were uninformed (since they produced no results) and their demand would depress over time to the "efficient" level. The Amendments were designed, according to Peltzman, to eradicate this "period of learning" by essentially making new drugs effective when they initially hit the market.

Using the economic technique referred to in economic literature as "revealed preference," Peltzman looks at the sales of new prescription drugs before and after the Act to determine how large the consumer loss was to the "period of learning" and how much the amendments succeeded in depressing that period. He concludes that the pre-amendnent period of learning is almost non-existant and that aggregate demand for new drugs stayed fairly constart over time. Thus, he argues that physician prescriptive practices were well informed from the start and were at the efficient level of demand.

Of course, there is the substantial possibility, given the data about drug reactions, that physicians were prescribing ineffective drugs and just plain failed to "learn by experience." But Peltzman contends that, even if that were the case, the consumer was no better off after the amendments since the post-amendment demand per new drug declined at the same relatively low rate as before the Act. So, either physicians were well informed before the amendments (making the provisions superfluous) or they did not do their job in making the consumer more informed after the Act. Peltzman argues the former. Since aggregate demand for drugs declined absolutely in the post-amendment era, Peltzman concludes that consumers were worse off -- i.e., they purchased less because information previously furnished them was now withheld.

Peltzman's hypothesis rests heavily on the assumption of well-informed consumers. But who is the consumer in this instance -- the physician, who prescribes, or the patient, who purchases? The "learn by experience" model hinges on the notion that consumers will change their consumption patterns over time. But is the patient going to refuse to purchase a drug which the doctor prescribes? When a patient visits the doctor, he is purchasing medical expertise. A drug purchase is really just an extension of that original purchase. What of the doctor? He or she simply cannot "learn by experience" outside of controlled laboratory tests. "Determining cause-and-effect relationships between drugs and disease," states T.A. Vonder Haar, coordinator of programs in public policy for the Extension Division of the University of Missouri - St. Louis, "is almost impossible, for ill effects can always be attributable to variables other than medications the patient is presently taking."[456a] Vonder Haar goes on to state that while the hospital environment is more controlled, the same problems arise over cause-and-effect between a specific drug and a reaction in hospitals because the average patient receives twenty different drugs during hospitalization.

The facts show that physicians do prescribe ineffective drugs, largely because of the $5,000/doctor per year drug advertisements on claims by drug manufacturers. Let's look at several examples of where physicians did not follow the theory that they were each a laboratory that "learned by experience."

o Studies in the 1950's, for example, demonstrated that DES, as well as virtually all estrogens, was not effective in preventing miscarriages.[457] Subsequently, more than 200 American women developed cancer of the cervix or vagina from DES and hundreds of thousands more, the benign but worrisome condition of vaginal adenosis. Yet use of dangerous sex hormones continued through 1975, unabated, despite FDA's withdrawal of approval for many of these drugs as early as October 10, 1973, and warnings by FDA in its Drug Bulletin of January-March, 1975, that estrogenic and progestational hormones should not be used during pregnancies.[457a] 500,000 women in 1976 were treated with sex hormones that potentially cause birth defects.[458]

o Two antibiotics produced by Upjohn -- lincomycin and clindamycin 1964 and 1970, respectively, were used in treating conditions for which they had no effect: acne, sore throats, and the common cold. As much as 95% of prescriptions were for such ineffective treatment.[459] Yet, one observed side effect of the drug, initially cited as diarrhea, was not diarrhea at all. It was colitis, a severe, sometimes fatal, inflammation of the bowel. Apparently, Upjohn never conducted the essential and simple procedure (proctoscopy) to differentiate between colitis and diarrhea. The result was 600,000 cases of colitis produced by clindamycin alone. These two Upjohn drugs were also responsible for at least 39 deaths.[460]

o One year after Parke-Davis introduced chloramphenicol in 1949, an antibiotic to treat a variety of infections, research showed that it caused fatal aplastic anemia or bone marrow poisoning. Twenty-five years after the drug was introduced, a research team at Vanderbilt University found that the drug was still widely used for minor infections where the risk clearly outweighed the benefit.[461] Of 542,000 prescriptions, 110,000 were for prophylaxis after surgery even though no infection was present; 34,000 for ear infections, and 93,000 upper respiratory diseases, conditions for which other equally effective and less toxic drugs are available. Hundreds of lives have been lost as a result.[462]

o Perhaps no example illustrates the profligate prescription of ineffective drugs as the use of Ciba Geigy's Phenformin in treating diabetes mellites. This drug was responsible for as many as three deaths a day -- 1,000 a year -- as late as 1977, with no offsetting savings of lives.[463] Ciba's retail sales of the drug were $24 million annually.[464] As of April 21, 1977, 250,000 people used Phenformin despite studies showing as early as 1960, four years after it was first marketed, that it increased lactate levels in diabetics using the drug.[465] On October 21, 1976, the FDA's

Endocrinology and Metabolism Drug Advisory Committee concluded, "... there is a clear and unequivocal association between use of Phenformin and lactic acidosis."[466] Lactic acidosis is accumulation of lactic acid which can be fatal. Such was the case in nearly 50% of the cases of lactic acidosis resulting from the administration of phenformin.[467] Despite Ciba-Geigy's opposition, HEW Secretary Joseph Califano ordered the drug taken off the market. Examples like Panalba, DES, lincomycin, clindamycin, chloramphenicol, and phenformin expose Peltzman's thesis of the physician learning-by-experience as an ideological hypothesis contradicted by the empirical evidence.

Peltzman makes other assumptions which render his conclusions invalid. In focusing on "aggregate demand," for example, he assumes that all physicians overprescribe when they lack information. The assumption that some physicians are more cautious when they lack hard data is just as plausible. Hence, one part of the profession may overprescribe before the amendments while another group underprescribes, both because of insufficient information. As a result of the amendments, those over-prescribing may reduce prescriptions while those under-prescribing may increase them. The result will show, perhaps, the *same* aggregate demand as before -- Peltzman's result. But what has occurred is very different.[468] Similarly, misused drugs may have been abandoned for those that are *more* effective and safe, thereby making aggregate demand a misleading measure. By failing to refine his analysis Peltzman arrives at his predetermined and anti-regulatory conclusion. Peltzman assumes, in addition, that the causal relationship runs from demand to supply, that pharmaceutical companies have new compounds waiting on their shelves that will respond to the market. After the amendments, he claims consumers are less informed (because of the stiffer requirements on claims) -- with the result that demand has gone down and fewer drugs are marketed. The supply of drugs is certainly responsive to the *ailments* is society, a relatively fixed measure. To the extent ineffective drugs are kept off the market, supply will fluctuate according to the scientific improvements with which to treat those ailments.[469]

On the supply side, Peltzman points to the decline in New Drug Applications as a demonstration that the amendments impeded innovation. He points to a decline in New Chemical Entities (NCE's) as evidence that there was a decline in significant drugs in the post-amendment era, thus making the net effect, in his words, of "having some thalidomides a gain."

Yet Peltzman ignores the historical and worldwide decline in the development of new drugs that began in the 1950's, not 1962.[470] In fact, a considerable portion of the NDA's in the late fifties were nearly exact duplicates of those already on the market. Of the 25,000 different prescription drugs and dosages available on the American market in the early seventies, according to former Director of the Bureau of Drugs at FDA, Henry E. Simmons, M.D., most were "either exact duplicates of each other or nearly so."[471]

The crux of the issue lies with quality. Were drugs having significant, new therapeutic value kept off the market because of the amendments? The indications are that the amendments forced industry out of their "patent slumber" and into a concerted effort to develop drugs of greater therapeutic value.[472] Peltzman, however, uses a questionable measure for significant drugs (New Chemical Entities) and distorts even the trend of that measure; during many years in the post-amendment era, more NCE's were developed than prior to the legislation. Nor are NCE's the measure for significant therapy. Of 775 NCE's as of April 1, 1977, 50 or 6.5% were judged by an FDA evaluation to have potential for "important therapeutic gain," 167 or 21.5% "modest therapeutic gain," and 538 or 69.4%, "little or no therapeutic gain."[473] One expert witness at the Nelson Hearing stated that the rate of development of truly significant and unique therapeutic entities has remained fairly constant in the past two decades at 5-7 drugs per year. "The major change in the last decade is that the percentage of significant drugs approved has increased over 300% while fewer 'me-too' drugs are being marketed," stated Dr. Henry E. Simmons.[474]

Despite these facts, the alleged "drug lag" has been criticized in a series of studies conducted by Louis Lasagna, and William Wardell of the University of Rochester from a different standpoint: a comparison between introduction of new drugs in the United States to Great Britain, where regulations on marketing are less strict. They found that although the number of new drugs developed in each country was equal from 1972-1976, Great Britain generally made the drugs available for marketing faster than in the United States. Furthermore, they contend that some of the drugs introduced in Britain but not in the U.S. represented significant therapies. Their argument rests heavily on the "Beta Blockers," drugs principally to treat cardiac arrhythmias. They estimate that some 10,000 lives could be saved every year in the U.S. if the Beta Blockers available in Britain became available in the U.S.[475]

Lasagna and Wardell, however, do not fully consider the fact that two Beta-Blockers made available in Europe and not in the U.S. proved to be carcinogenic, while others in their study also presented life-threatening hazards.[476] Furthermore, none have been shown to be more effective than the two now approved in the U.S.[477]

Lasagna and Wardell also cite as an example of drug lag the drug for treatment of epilepsy -- sodium valproate -- available in Great Britain in 1972.[478] But at FDA's request, Abbott's marketing application was submitted a year ahead of Abbott's planned schedule, on September 22, 1977. 160 days after receiving additional information, it was approved on February 28, 1978.[479] Ultimately, in the view of Dr. Sidney Wolfe of Public Citizen's

Health Research Group:

> There are no therapies available in other countries not available here. 'Drug Lag' is a concoction of the drug industry which seeks to stimulate the marketing of inferior drugs. The decrease of new drugs in the U.S. has occurred not in the number of important, significant, or unique drugs, but in the number of drugs which offer no advantage over existing therapy." 480

In addition to the weaknesses of that study outlined earlier, Peltzman concentrated only on the costs and benefits of the 1962 amendments. He ignores subsequent development within FDA relating to the amendments. It was eight years, for example, before FDA defined what is meant by the 1962 requirements of "efficacy" and "well controlled investigation." In other words, since the law was not fully implemented until later, the benefits of the amendments were not fully captured in the period under scrutiny by Peltzman. "Therefore," states an MIT research team, "conclusions reached from an examination of data in the 1960's must be viewed cautiously."[482]

Peltzman also neglected the provision of the amendments which removes from the market retroactively those ineffective drugs on the market responsible for $1-$2 billion spent on ineffective therapy, cited at the beginning of this section.** In an unpublished Ph.D. dissertation, "The Economic Effects of the 1962 Drug Amendments," J.M. Jondrow puts the annual benefit of eliminating such ineffective drugs at $300 million.[483] While Jondrow's figure has been criticized for various methodological assumptions, there is reason to believe that his figure is conservative.

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*According to FDA, of the nearly 1,800 commercial IND applications pending at FDA as of April, 1979, only 47 (fewer than 3%) were judged to have potential for "important therapeutic gain." Another 205 had potential for "modest therapeutic gain," while over 80% were judged to have potential for "little or no therapeutic gain." Going further, the term "drug lag" has been applied indiscriminately to all new drugs regardless of potential for therapeutic gain. Evidence from FDA, however, shows that the average time to approve drugs that offer potential for "important therapeutic gain" is much less than for those with potential for "little or no therapeutic gain." 481

**According to Public Citizen's Health Research Group, annual expenditures for ineffective drugs in the U.S. is still over $1 billion each year. 484

The Jondrow study does not attempt to measure the beneficial post-amendment effects of shifting the focus of drug innovation from Quantity to quality, an effect which would tend to compensate for any alleged "lag". Such an assessment will be difficult until a consensus can be reached on the appropriate measure for "significance" in drug therapy.

In addition, FDA estimated, in an inflation impact statement, that a ban on chloroflurocarbons from aerosol propellants would prevent about 3.1 million cases of nonmelanoma skin cancer in the white population of the U.S. over the next century, or about 31,000 cases per year in the U.S.[485] Costs of treatment for such cancer is in the range of $436-$1731 per case. Benefits to the consumer and industries outside of the aerosol industry for an 18 month phase-out were estimated to be $1.1 billion annually. While projected costs to the aerosol and chemical industries were slightly greater than the quantified benefits in this study, no attempt was made to appraise the adverse effect of damage to the ozone layer on the climate of the world and food production; yet, these long-term effects perhaps supply the most convincing rationale for and the greatest benefits from such regulation.

While quantified benefits from removal of ineffective drugs and the chloro-flurocarbon ban exceed $1.4 billion, examples cited in this section indicate that drug regulation should be strengthened rather than weakened. For example, the delay in taking phenformin off the market and the failure to effectively limit the use of estrogens indicates that FDA should have greater jurisdiction over drugs in the post-marketing stage. FDA should also be empowered by legislation to restrain the promotional efforts of pharmaceutical companies and the "misinformed" physician. Provisions that have been suggested in this area include limitation on the distribution of marketed drugs to certain facilities and specialists, requiring written informed consent for post-market use of certain drugs, and requiring patient package inserts explaining areas of ineffectiveness and listing adverse effects and attendant risks.

### E. Consumer Product Safety Commission

When the National Commission on Product Safety reported its findings to Congress in June, 1970, it was clear that the market left to itself could not perform the task of providing safe products. Twenty million product related injuries then occurred every year in the United States, along with 110,000 permanent disfigurements, and 30,000 deaths.[486] If anything these figures are underestimates because they do no include chronic illnesses, birth defects, cancers, and other health problems that are the unquantified consequences of toxic substances and synthetic fibers encountered in daily life. The economic loss from the safety related statistics alone is well over $9.5 billion every year.[487]

In line with the recommendations of the Safety Commission,Congress passed the Consumer Product Safety Act in 1972, creating an agency with a broad mandate to protect the public from unreasonable risk and injury connected with the more than 15,000 categories of products. In addition to establishing safety standards, the Commission also had an informational and investigatory function. Research and studies were to be conducted to determine the cause, nature and frequency of injury and disease.

With a budget of $40 million per year, the smallest of the health and safety commissions, CPSC finally abandoned the "random walk" strategy which produced the swimming pool slide standard as its first effort. In July, 1976, it spelled out its criteria for priorities -- criteria that include the frequency and severity of injury, causality of the injury, chronic injuries, costs and benefits of CPSC action, unforeseen nature of risk, and the probability of exposure to the hazard.

Economic factors, then, enter as just one component in the agency's decision on regulatory action. And again, benefits are impossible to quantify.

How would C-B analysis appraise the standard for child resistant caps, for example, one which reduced emergency room treated poisonings between 1973 and 1978 by 230,000 and saved the lives of 200 to 300 children under the age of five?[488] Or one which cut in half the number of crib deaths every year -- saving 84 infants every year -- since 1974 when that standard became effective? As explained in the section on benefit measurements, the infant has one of the smallest discounted future earnings of any member in society. A willingness to pay approach would be futile. The Commission's decision to issue regulations rather than, say, supply extra information as an alternative, reflected the vulnerability of the particular class exposed and the relative severity of the hazard.

When the Commission has attempted to quantify benefits in its economic analyses, the results have been substantial. For just three standards -- lawnmower, architectural glass, and a potential regulation for furniture -- benefits are pegged at $750 million per year once all lawnmowers, architectural glass, and furniture meet the standards.[490]* In each case, says the CPSC, benefits exceeded costs.

Where corporations have not resisted, as with the childproof caps, standards were promulgated with favorable results as early as 1973. But, in the cases of aluminum wiring, lawnmowers, flammable furniture, and the recent entrance into the toxic substance area, CPSC has encountered the corporate stall.

Aluminum Wire--Not long after the Consumer Product Safety Commission launched its investigation into the potential hazards of "old technology" aluminum wiring in May 1973, the evidence of an "imminent" fire danger began to accumulate. The Commission was deluged with complaints and reports involving "flickering lights, hot receptacles, faceplates and heated walls, burning odors and smoke at receptacles and switches, burnt, melted and charred insulation, melted wire, dead receptacles and circuits, sparking arising at receptacles and sizzling, popping, or hissing sounds at receptacles."[491] More than 1.5 million homes built between 1965 and 1973 are subject to hazards which have also caused injury and death.[492] The Beverly Hills Supper Club fire in Kentucky, for example, which claimed the lives of 165 and injured 70 others, is believed to have been caused by "old technology" aluminum wiring.[493]

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*While the entire $750 million will not be reaped in 1985, these three standards represent an extremely small percentage of CPSC's activity. As a token acknowledgement of this fact, the entire $750 million estimate is included in the table on p. 131a for benefits realised by 1995.

To correct the situation would run $300-$600 per house just for a "quick fix" (installing the "new" technology "Copper Aluminum Revised" (CO/ALR)* device and "pigtailing").[494] Many homes require rewiring, which costs $2000-$[illegible]000 per home.[495] In other words, the remedy for not regulating methods of installation of aluminum wire runs into the billions of dollars, just for materials. Today, regulation can shift that burden from the consumer to an industry which knew of the hazards before any aluminum wiring was installed.

As early as 1952, the National Electrical Manufacturers Association knew that special complications were involved in the "blind substitution of aluminum for copper... as experience has shown."[495] While it was substituted for copper in commercial wiring in the early 1950's, special tools and procedures were employed to minimize exposure of the aluminum to the air. (Aluminum oxidizes through exposure so the electrical current is forced to flow through a progressively narrower conduit creating greater heat.) But when aluminum became competitive to copper for residential use in the mid-sixties, the aluminum industry issued no caveats in the promotion of their product.[497]

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* A CO/ALR Device is a receptacle with special plating materials and surfaces which are supposed to assist id mitigating the danger present in aluminum connections.

The Consumer Product Safety Commission, responding to complaints, began to distribute a brochure to warn consumers of the dangers of "old technology" wiring, and informed consumers of the CO/ALR device. On November 4, 1975, two years after the start of the investigation, CPSC published a notice in the Federal Register announcing its intention of developing a standard for aluminum wiring.

Kaiser brought suit, contending that CPSC had no jurisdiction over aluminum wire -- that it was not a consumer product.[498] Well-known for its favorable disposition towards business, the third Circuit Court in Delaware agreed with Kaiser and enjoined the Commission from further publication and distribution relating to aluminum wiring hazards. During this period, Anaconda and other manufacturers were brought to court by CPSC for not complying with subpoenas for information, and on June 15, 1977, three months after the Delaware court ruling, the federal District court for the District of Columbia ruled that aluminum wire was indeed a consumer product.[499] CPSC appealed the Kaiser case in the third Circuit and Anaconda appealed the latter case -- $10 million, or one fourth of CPSC's annual budget, according to a CPSC lawyer, has been spent by the agency on the legal actions involving aluminum wiring.[500] Ultimately, the Third Circuit ruled for the Commission, and the D.C. Circuit remanded the case to determine if aluminum wiring systems were sold or distributed to consumers as discrete articles of commerce.

While the legal struggle continues, so do the fires and deaths: one in Orange County, Texas claiming the life of a father and injuring two daughters, one in Hampton Bays, N.Y. which claimed the life of a father and daughter,[501] another in Maitland, Florida on November 12, 1977 left the victim, a young woman, dead at the front entrance to her home while in Dalton, Georgia, five days later, a fire triggered by faulty aluminum wiring destroyed a $1 million, 24 unit apartment complex. As Chairman Susan King recently stated, such costs of negligence, in the end, outweigh costs of prevention:

> Ultimately, the bottom line question becomes one of how, and when certain costs will be distributed in society. Health and safety regulation is by definition preventive in nature. It may be expensive, but so is treatment after the fact.[504]

Lawnmowers--After the automobile, the power lawnmower is the most injurious consumer product. 14% of the 60,000 injuries associated with lawnmowers requiring emergency room treatment and 30 fatalities caused every year by power mowers result from objects that can be hurled by the mower at speeds over 200 mph.[505] Many such incidents involve innocent bystanders:

> A four year old in Iowa is playing in her front yard, while forty feet away a rotary power lawnmower is being used. The whirling blades of the mower pick up a small piece of wire, hurling it into the air. The wire pierces the girl's skull and kills her.[506]

Another fifty-four percent of all injuries -- lacerations, punctures, amputations -- result from direct contact with the blade.

CPSC has been involved in the development of a safety standard for lawnmowers ever since the Commission was created. The proposed standard was carefully constructed to eliminate the injuries associated with thrown objects and blade contact cited above. In order that the safety standard address the most numerous injuries as soon as possible, the scope of the final standard was narrowed to blade contact injuries from walk-behind mowers. Thrown object injuries and riding mower injuries may be addressed at a later date. But the Outdoor Power Equipment Institute (OPEI) has been instrumental in delaying the regulation until the approaching decade. Its complaints: the costs outweigh the benefits; they have not been given enough time to develop alternatives; they are design rather than performance standards.

A number of cost-benefit analyses have been conducted on the mower standard. A Stanford Research Institute (SRI) study commissioned by OPEI in May, 1977, has received the most notoriety.[507] It estimated that medical costs and lost salaries due to lawn mower injuries run $381 million each year.[508] While $35 million of such costs might be recouped and translated into benefits in the first year after the standard is introduced, states SRI, first year costs to comply based on "state-of-the-art" engineering would run between $175-$300 million.[509] By the tenth year after introduction of the standard, it was expected that $261 million of the $381 million in yearly damages would be eliminated (translated into benefits). The average increase in the retail price of a mower for the consumer is $5 a year for the life of the machine, according to the Consumer Product Safety Commission's staff.[510] And CPSC's own analysis places the $200 million plus in yearly benefits, not counting aversion of pain and suffering, ahead of total costs of $190 million.[511]

When Henry E. Thomas, Director of Standards and Regulations Division at the Environmental Protection Agency tried to decipher the reasons for the discrepancies between the two cost-benefit analyses, he encountered a major roadblock; SRI was ordered by OPEI to destroy all backround information and supporting documentation and analyses incident to that report:

> We find ourselves in a somewhat perplexing position: on the one hand, we have the results of our own economic investigation, which are fully supported by extensive background information and analyses which have been communicated to OPEI in the greatest detail; on the other hand, we have the OPEI/SRI CPSC testimony, which differs from our findings but for which there has apparently been offered no supporting material at all, and indeed for which the contractor was ordered to destroy all backround information.[512]

Is an 80% reduction in risk of injury worth $5 a year? Apparently not for the Council on Wage and Price Stability, who would prefer the SRI cost-benefit analysis to be the litmus test for safety standards.[513] While COWPS states that the standard would make consumers worse off because they would be forced to pay more for safey than it is "worth" to them, implying a willingness-to-pay calculation, one wonders why the Council does not reach the conclusion that consumers choose to pay more for greater risk. For according to Consumer Reports, the most costly mowers are the least safe while the cheapest models are the safest.[514] Under the perfectly informed model used by economists, the implication is that consumers pay more for greater risks. Obviously, the logical conclusion is that consumers are uninformed. As Jack Anderson stated in a recent column, "The average homeowner mowing his lawn on a weekend afternoon probably doesn't realise he is pushing a piece of dangerous machinery."[515]

The final standard requires blade stoppage within three seconds from the time the operator's hands lose a grip on the handle. The technology for such a clutch mechanism, or "dead man control," has been available for over thirty years. A plea for more time is simply untenable, especially when Honda already has such a mower on the market. The control is less than 10% of the cost of the price of this machine.[516]

Nor does industry's complaint that CPSC has dictated a design rather than a performance standard appear persuasive. Although the clutch mechanism is probably the only current method of attaining the standard with rigid blades, the standard does not apply to flexible blade alternatives marketed by Weedeater and Toro.

*Toxics*--Of 3.5 million chemicals on the market, only 6,000 have been tested for potential carcenogenicity.[517] Of those 6,000, 1,000 have produced tumors in laboratory animals.[518] Industry has not helped to speed the process. A brochure from the Bureau of National Affairs advertises its journal, the *Product Safety and Liability Reporter*, with this statement:

> The Consumer Product Safety Commission could do a lot more than ban you in Boston!...The Commission could banish your product from the market place entirely. Yes, under the new Carcinogen policy, you could suffer from a wide range of regulatory options from complete bans to mandatory testing at *your expense*.[519]

But the episode involving CPSC's ban of the carcinogen TRIS is one of both corporate and government negligence.

In 1974, the CPSC endorsed a National Bureau of Standards' test in a performance standard on flammability for sleepwear. The standard did not require manufacturers to determine the toxicity of the chemical of fabric used to meet the flammability test. Because it was the cheapest flame retardent available that could meet the standard, TRIS was the chemical most widely used. Michigan Chemical Company, notorious for its negligent mixture of PBB's with animal feed which has contaminated the majority of residents of Michigan, was also the largest producer of TRIS.[520] While a final report on mutagenicity commissioned independantly by MCC was available in draft form by October, 1976,[521] the company did not release its findings until the Moss subcommittee's hearing in May, 1977.[522] In those hearings it was revealed that the company was actually aware as of November, 1975, that TRIS was a mutagen and highly toxic to fish at a 1 part per million.[523] 70,000 parts per million were found on the surface of TRIS-treated garments, and 60 million children may have been exposed.[524] Yet in July, 1976, Michigan Chemical Company sent a memorandum to the Commission stating, "TRIS does not pose a mutanagenic or carcinogenic hazard."[525] The Commission finally moved to ban sleepwear containing TRIS on April 7, 1977.

But to add insult to injury, the textile industry moved to ship millions of dollars worth of banned garments overseas. States Rep. Henry A. Waxman, Democrat from California,

> These overseas exports were deliberate efforts by the U.S. manufacturers to recoup a portion of their losses resulting from the CPSC ban. The majority of the exports were shipped to Third World countries where product safety laws are less strict and the expertise to evaluate chronic hazards unavailable.[526]

Asbestos and vinyl chloride pose dangers in consumer products as well as in the workplace, as the recent "voluntarily-agreed-to" ban on hairdryers containing asbestos demonstrates. The Interagency Regulatory Liason Group has been established between CPSC, EPA, FDA, and OSHA to coordinate efforts dealing with toxic substances. Such a group represents a promising step forward in grappling with hazards that cross agency lines.

The Consumer Product Safety Commission is no longer in its infancy. While it is subject to limited funds, it has significant powers to implement its mandate. It receives over 100,000 complaints on its hotline each year and 60,000 letters from consumers requesting information and registering complaints.[527] It has issued product recalls affecting over 16 million items.[528] No analysis has attempted to quantify the benefits associated with such action. And it is also evident that the Commission effort has been thwarted repeatedly by industry whether the concern is aluminum wiring, lawnmowers, or TRIS. A formal cost-benefit analysis, inserted as a decision rule rather than employed in its current status as an extra tool, can only impede the agency's mission. "We can't always engage in the numbers game so many people like to play," states Susan King. "We have no way to measure how many accidents didn't happen, or how many deaths were avoided [as a result of regulation]." 529

## ESTIMATED COSTS* AND BENEFITS# OF SELECTED REGULATORY ACTIVITIES ($Billions)

| Agency | Costs in 1978 | Benefits in 1978 | Benefits in 1985 | Potential Benefits (Damages in 1978) |
|---|---|---|---|---|
| Occupational Safety and Health Administration | 4.3[a] | 6.4 | 7.2 | 73.0 |
| Environmental Protection Agency | 22.7[b] | 23.3 | 44.2 | 56.0 |
| National Highway Traffic Safety Administration | 4.0[c] | 6.0 | 26.0 | 68.0 |
| Food and Drug Administration | .4[d] | 1.4 | 2.4 | N/A |
| Consumer Product Safety Commission | N/A | N/A | .8 | 9.5 |
| Total | $31.4 | 37.1 | $80.6 | $206.5 |

* Based on Murray L. Weidenbaum's and Robert DeFina's "The Cost of Federal Regulation of Economic Activity, AEI, May, 1978. While that study reported figures for 1976, the costs listed here are updated to 1978 using the authors' methodology explained below. The authors of this report (Green and Waitzman) do not concur with the Weidenbaum/DeFina methodology and total, but we assume *arguendo* the highest figures published for the purpose of this comparative chart.

# Based on studies cited in Chapter VI. *Quantifying the Benefits*.

[a] Annual McGraw-Hill Surveys, Investment in Employee Safety and Health, 1972-1978. This figure is for 1978.

[b] From *Environmental Quality*, The Ninth Annual Report of the Council on Environmental Quality, December, 1978. p. 424.

[c] Mr. Weidenbaum's corresponding estimate for auto safety regulation is $438/car (see *Contributions of Automobile Regulation*, NHTSA, June, 1979. p. 12.) Multiplying this figure by the 9.15 million cars produced in 1978 yields the figure in the table.

[d] Mr. Weidenbaum's 1976 figure for FDA is calculated by multiplying annual prescription drug sales by 4%. This procedure, applied to the $11 billion in such sales in 1978, yields the figure in the table, rounded to the nearest hundred million.

## FOOTNOTES

1. See Kahn, Alfred E., The Economics of Regulation: Principles and Institutions, Volume II, 1971, pp. 11-46; Noll, Roger G., Reforming Regulation, 1971, pp. 33-46; Green, Mark J., ed., The Monopoly Makers, 1973.

2. John Tirman, "Business Wars on the Regulators", The Nation, December 30, 1978, p. 731.

3. Fletcher Byrom, Chairman of Koppers Co., at conference sponsored by University of Pittsburgh Graduate School of Business, "Government Regulation: New Perspectives", December 5-7, 1978 (Hereafter, "Pittsburgh Conference").

4. See Kahn, note 1, pp. 2-3, pp. 113-171. While natural monopoly arises out of the technical properties of production in pure economic theory, other economic rationales for regulation have been suggested where, in Kahn's words, "competition is technologically entirely feasible," but "regulation is invoked because it is believed that competition would be characterized by intolerable imperfections." (pp. 4-5) Such rationales include "buyer ignorance", "destructive competition", "cream-skimming", and "excessive nonprice rivalry" (pp.5-10). Many of these rationales share a component of the natural monopoly argument.

5. While this rationale has legitamacy, in fact the Texas Railroad Commission's system of pro-rationing has entrenched the industry's oligopoly more than it has conserved a scarce resource.

6. Bernstein, Marver, Regulating Business by Independent Commission, 1955, pp. 90-91.

7. Id., p.90.

8. Kolko, Gabriel, Railroads and Regulation, 1877-1916, 1965, p.232.

9. Noll, Roger G. See note 1, p. 43.

10. "Serving two Masters", Common Cause, October, 1976, p.i.

11. Id. p.27

12. Moore, Beverly C., "The FCC: Competition and Communications" in Mark Green, ed., see note 1, pp.36-73.

13. Id. Also see Kahn, note 1, pp.34-35.

14. "Study on Federal Regulation", Committee on Governmental Affairs, U.S. Senate, 95th Cong., 2d sess., December, 1978, Volume VI, "Framework for Regulation", p.12.

15. Moore, see note 12.

16. Id.

17. See p.12 for an in depth discussion of diethylstilbestrol (DES) and its long term effects.

18. See p.93 for a more detailed discussion of hazardous waste dumping.

19. Business Week, September 4, 1978, p. 58.

20. Id.

20a."The Devils in the Product Liability Laws", Business Week, February 12, 1979, pp. 72-78.

21. Smith, Robert Stewart, The Occupational Safety and Health Act, Its Goals and its Achievements", 1976, p.26.

22. Bureau of Labor Statistics.

23. On file with the author.

24. Ashford, Nicholas A., Crisis in the Workplace, 1976, p. 348.

25. "Making Prevention Pay", Final Report of the Interagency Task Force on Workplace Safety and Health, December 14, 1978, p.IV-7.

26. Glenn R. Shor, "Occupational Disease and Compensation: An Analysis of the 1972 SSA Survey of Disabled Adults", January 3, 1978, pp. 6-12.

27. Fink, F.W. et.al., "Final Report on Technical-Economic Evaluation of Air Pollution Corrosion Costs on Metals in the U.S.", Battelle Memorial Institute, 1971, p.80.

28. "Canadians Want a Treaty to Reduce U.S. Acid Rain", The Washington Post, August 15, 1979, p. A2.

29. Id.

30. Salmon, Richard L., "Systems Analysis of the Effects of Air Pollution on Materials", Midwest Research Institute, January, 1970, p.53.

31. Salvin, V.S., "Survey and Economic Assessment of the Effects of Air Pollution on Textile Fibers and Dyes," Report to the National Air Pollution Control Administration, June, 1970.

32. Hamilton, James and Suzanne Scotchmer, "Assessing the Economic Effects of Implementing Air Quality Management Plans in California", Public Interest Economics - West (PIE-West), June, 1979.

33. See note 34B.

34. Douglas Costle, Administrator of EPA, before the Consumer Federation of America, February 7, 1979.

35. Senator Abraham Ribicoff, D - Connecticut, at Pittsburgh Conference, see note 3.

36. Business Week, October 30, 1978.

37. Davidson, Daniel J., Administrative Law Judge, "Initial Decision", Proposal to Withdraw Approval of New Animal Drug Applications for Diethylstilbestrol, Docket no. 76N - 0002, Department of Health, Education, and Welfare, Food and Drug Administration, September 21, 1978, pp. 32-34.

38. Hamilton and Scotchmer, see note 32, p. 6.

39. See notice published by the Food and Drug Administration in the Federal Register on October 18, 1973; 38 F.R., 27940, 1973.

40. "Surgeon General to Ask Doctors to Notify Women Given DES of Its Link to Cancer," The Wall Street Journal, October 5, 1978, p.5.

41. Id.

42. "Recipients of DES Warned to Get Regular Checkups", Washington Post, October, 5, 1978, p. A3.

43. "Asbestos - The King of Killers", Bulletin, September 15, 1978, p.6.

44. Ashford, Nicholas A., "The Role of Risk Assessment and Cost-Benefit Analysis in Decisions Concerning Safety and the Environment", Presented at the FDA Symposium on Risk/Benefit Decisions and the Public Health, Colorado Springs, February 17, 1978, p.5.

45. Ashford, see note 26, p. 369.

46. Ferguson, Allen R., Regulatory Reform Seminar, Sponsored by U.S. Department of Commerce, October 17, 1978, p. 128. (Hereafter "Commerce Seminar".)

47. 1978 Survey of Public Perceptions of Highway Safety, Teknekron, Inc. NHTSA, November, 1978.

48. Id.

49. Noll, Pittsburgh Conference, see note 3.

50. See note 36 .

51. "4 Women Assert Jobs Were Linked to Sterilization", The New York Times, January 5, 1979, p. A21.

52. Commerce Seminar, see note 46.

53. Business Week, March 20, 1979.

54. "Alabama Mayor Sees Neglect of Blacks in DOT Pollution," Washington Post, February 2, 1979, A17.

55. Pittsburgh Conference, see note 3.

56. Ashford, see note 24, p.19.
57. Richard Thaler and Sherwin Rosen, "The Value of Saving a Life: Evidence from the Labor Market", in N.E. Terleckyj, ed., Household Production and Consumption, 1975, pp. 295-296.
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59 "Border Wars in the Forest", In These Times, Vol. 2, No. 50, November 8-14, 1978, p.24.

60. Commerce Seminar, see notr 46, p. 106.

61. The New Republic, 1979

62. See p. 126 for more detail.

63. "New Data on Asbestos Indicate Cover-Up of Effects on Workers," Washington Post, November 12, 1978, pp. A1 and A6.

64. Ashford, see note 44, p. 15.

65. See Kristol, Irving, "A Regulated Society?", Regulation, July/August, 1977, pp. 12-13; and Weaver, Paul H., "Regulation, Social Policy, and Class Conflict", The Public Interest, number 50, Winter, 1978. pp. 45-63.

66. Kristol, see note 65, pp. 12-13.

67. Pittsburgh Conference, see note 3.

68. See, e.g., Arnoff, Craig ed., Business and the Media, 1979; Green, "How Business is Misusing the Media," The New York Times, December 18, 1977, Finance Section.

69. Cited in Turner, James S., The Chemical Feast, 1970, pp. 127-128.

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73. Eckstein, Otto, Water Resource Development, The Economics of Project Evaluation, 1958, p. 48.

74. "Risk-Benefit Analysis, The Cop-Out of Government Regulation," Trial, February, 1978, p. 45.

75. Allen, Julius W., "Costs and Benefits of Federal Regulation: An Overview," Congressional Research Service, Library of Congress, July 1 1978, pp. 1-6; "Federal Regulation and Regulatory Reform," Subcommittee on Oversight and Investigations, Committee on Interstate and Foreign Commerce, House of Representatives, 94th Cong., 2nd Session, October, 1976 pp. 505-515; "Study on Federal Regulation", see note 14, p.83; "Environmental Quality - 1978," 9th annual report of the Council on Environmental Quality, December, 1978, pp. 418-419.

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82. "U.S. Revising Cost of Beryllium Safety," Washington Post, September 18, 1978.

82a "The Chemistry of Risk," Seven Days, June 5, 1979, p.25. See also The New York Times, September 28, 1979, p. D1.

83. "U.S. Steel's Environmental Data Reports Questioned by SEC on Issue of Adequacy," The Wall Street Journal, May 31, 1978.

84. The Wall Street Journal, May 9, 1979, cited in Jorling, Thomas C. "Regulation and Costs," The Wall Street Journal, June 1, 1979, p.20

85. Jorling, see note 84.

86. Id.

86a Cited by Congressman Benjamin S. Rosenthal at the Press Conference on Business Opposition to Federal Consumer and Environmental Regulations, March 13, 1975, p. 8.

87. "Prices of Motor Vehicle Safety Equipment," Hearings before the Subcommittee on Executive Reorganization of the Committee on Government Operations, United States Senate, 90th Cong., 2nd Session, February 2, March 29, and May 1, 1968. p. 25.

88. "Hanging Together," Upholstered Furniture Action Council, on file with the Secretary, Consumer Product Safety Commission.

89. "Flammable Fabrics Touch Off Quarrel", The New York Times, December 7, 1978. pp. C1 and C5.

90. Rosenthal, see note 86a.

91. "Federal Regulation and Regulatory Reform," see note 75., p. 180.

92. Arthur Anderson is really not true to concept (3) since investment tax write-offs are not incorporated into their study.

93. Most of the compliance cost in Mr./Weidenbaum's study rely on a study performed by Robert DeFina in November, 1977 entitled "Public and Private Expenditures for Federal Regulation of Business," Working Paper # 22, Center for the Study of American Business. In May, 1978, Weidenbaum and DeFina co-authored an update for the American Enterprise Institute, "The Cost of Federal Regulation of Economic Activity," Reprint #88. The analysis of compliance cost figures in this study is based on the latter publication.

94. Weidenbaum's budget estimate in either study cited in note 93 will yield a multiplier less than twenty when divided into compliance costs. The relevant budget estimate, then, is drawn from a third source, "The Costs of Government Regulation of Business," prepared for the Subcommittee on Economic Growth and Stabilization, Joint Economic Committee, 95th Cong., 2nd Session, April 10, 1978. It is the budget estimate for 1976 from this Joint Committee print on p. 12 ($3.064 billion), not the different one on p. 16 ($3.139 billion), which Weidenbaum wishes to use to derive his multiplier, now slightly over 20.

95. Weidenbaum Subcommittee print, see note 94., p. 4.

96. These figures are derived by dividing individual agency compliance costs by administrative costs in Weidenbaum, AEI version, see note 93., p.6.

97. Weidenbaum Subcommittee print, see note 94, p. 12.

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100. Barry Felrice, Acting Associate Administrator for Plans and Programs, U.S. Department of Transportation, NHTSA, in June 13, 1978 letter addressed to Dr. Murray L. Weidenbaum.

101. *Id.*

102. "The Contributions of Automobile Regulation," National Highway Traffic Safety Administration, June, 1978, p.11.

103. "The Contributions of Automobile Regulation," National Highway Traffic Safety Administration, June, 1979, p.22.

104. Felrice, Barry, Acting Associate Administrator for Plans and Programs, in letter to Professor Lawrence H. Tribe, July 9, 1979. p.2.

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108. "Federal Paperwork: Its Impact on American Business," Report by the Comptroller General of the United States, General Accounting Office. November 17, 1978.

109. Arthur Anderson and Co., Inc., "Cost of Government Regulation Study for the Business Roundtable," *Phase 1, Statement of Study Methodology*," May, 1978. p.4-5.

110. For a breakdown of some of these"costs," see Arthur Anderson and Co., Inc., "Cost of Government Regulation Study," *Appendix*, March, 1979.

111. Arthur Anderson and Co ., Inc., "Cost of Government Regulation," *Executive Summary*, March, 1979, p.16.

111a. Marvin H. Kosters, "Counting the Costs", *Regulation*, July/August, 1979, Vol. 3, No.4, p.19.

112. *Study Methodology*, see note 109, p.4-6.

113. *Id.* p.4-8

114. see Jerome Schnee, in Mansfield, ed., *Research and Innovation in the Modern Corporation*, quoted in statement by Leonard Schifrin, Chairman of the Department of Economics, College of William and Mary, Nelson Hearings, see note 193, p. 9777.

115. Brookshire, David S., et. al., "Methods Development For Assessing Air Pollution Control Benefits," Office Research and Development, U.S. Environmental Protection Agency, February, 1979, Volume V, *Executive Summary*.

116. Wadell, Thomas E., "Preliminary Update and Productions of Selected Categories of Damage Cost Estimates," August, 1978, Table R.

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118. *Executive Summary*, See note 111, p.31.

119. Commerce Seminar, see note 46.

120. See note 117.

121. Telephone Interview with Jerry Walker, March, 1979.

122. *Executive Summary*, see note 111, p. 20.

123. Figures on assets for the seperate firms were taken from *Fortune*, May, 1978 ($263 billion). The figure for total assets ($985 billion) was obtained from Paul Zarrett, Manager of the Quarterly Financial Report.

124. Study Methodology, see note 109, pp. 3-1, 3-8.

124a "An Economic Evaluation of the OMB Paper on 'The Costs of Regulation and Restrictive Practices", staff paper prepared for the Subcommittee on Oversight and Investigations of the Committee on Interstate and Foreign Commerce, Office of Program Analysis, General Accounting Office, Sept., 1975.

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126. Pittsburgh Conference, see note 3.

127. Mendeloff, see note 107, p.6.

128. J.G.U. Adams ". . . And How Much for Your Grandmother," *Environment and Planning* A, 1974, Vol. 6, pp. 619-626.

129. *Id.*, p. 625.

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277. Mendeloff, see note 264, executive summary.

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282a. Smith states that his results imply a saving of .8 to 2.5 lost workday injuries a year per inspection (p.169) 180,000 inspections multiplied times this range yields the results given in the text.

283. Smith, see note 107, p. 162.

284. This estimate is still conservative. Consider first, that some corporations maintain that the relevant cost per injury is $50,000 not $10,200 (see note 25, p. IV - 29, footnote 25). Second, Smith's and Mendeloff's results are not mutually exclusive and may be separate effects that could be added together. Finally, the effects which Smith uncovered for inspections in one year would be expected to last for more than one year, so that the percentage reduction in injuries every year would tend to accumulate. This study, however, has used a $10,200 dollar estimate for injury and has not added together any of the effects uncovered by the authors, although such a procedure may be warranted.

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436. Joseph A. Califano, Jr., Public Citizen Forum, October 5, 1977, p.5.

437. Cited by Senator Edward M. Kennedy, Chairman Subcommittee on Health of The Committee on Labor and Public Welfare, December 18-19, 1973, p. 146.

438. Cited by Dr. Henry E. Simmons, see note 193, p.9373.

439. T.A. Vonder Haar, see note 435, p. 43.

440. Simmons, see note 197.

441. Quoted in T.A. Vonder Haar, see note 435.

442. Simmons, see note 197.

443. Evelyn H. Goldstein, drug editor of *Trial*, quoted in T.A. Vonder Haar, see note 435, p. 41.

444. *The New Endland Journal of Medicine*, cited in T.A. Vonder Haar, see note 435, p. 41.

445. See note 437, p. 136.

446. *Id.*

447. Califano, see note 436.

448. See note 437, p. 139.

449. *Id.*, p. 152.

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451. Letter and enclosure from Charles S. Spalding, DHEW, Health Care Financing Administration, January 4, 1979.

452. *Id.*

453. See statement by Dr. Herbert L. Ley, Jr. Commissioner , FDA, *Competitive Problems in the Drug Industry*, part 12, "Drug Combinations - Antibiotics," Hearings before Senate Subcommittee on Monopoly, Select Committee on Small Business, 91st Cong., 1st session, May 6,7,20, and 27, 1969.

454. Green, Mark J., *The Other Government*, 1978, p. 130.

455. See Sam Peltzman, " An Evaluation of Consumer Protection Legislation: The 1962 Drug Amendments," *Journal of Political Economy*, September/October, 1973, Vol. 81, No. 5.

456. Statement by Sam Peltzman, Nelson Hearings, see note 193, p. 9834.

456a. T.A. Vonder Haar, see note 435, p. 41.

457. See testimony of Sidney Wolfe and Anita Johnson, Public Citizen's Health Research Group before House Health Subcommittee, Hearings on 'Proposed Drug Safety Amendments to the Food, Drug, and Cosmetic Act,"June 22, 1976.

457a. Id., p.2.

458. *Id.*, p.3.

459. *Id.* p.7.

460. *Id.*

461. Testimony of Sidney Wolfe and Benjamin Gordon, Health Research Group, Before the Senate Health Subcommittee, Hearings on Drug Reform Act of 1978, April 12, 1978, p.4.

462. *Id.*, p.5.

463. *Complaint*, Public Citizen Health Research Group v. Joseph A. Califano, Jr., United States District Court for the District of Columbia, May 27, 1977. p.3.

464. Letter from Sydney M. Wolfe, M.D. addressed to Joseph A. Califano, April 21, 1977, p.2.

465. *Id.*, p.1.

466. *Id.*

467. *Id.*

468. This point was made by Thomas McGuire, Richard Nelson, and Thomas Spavins in "Peltzman on Drugs," *Journal of Political Economy*, June, 1975, pp. 655-660.

469. See note 194.

470. See statement by John Jennings, M.D., Nelson Hearings, see note 193, pp. 9913-9915.

471. Statement by Dr. Henry E. Simmons, see note 197, p. 12.

472. See note 195.

473. Testimony of Sidney M. Wolfe, M.D., Health Research Group before House Subcommittee Hearings on H.R. 11611 - Drug Reform Bill, June 13, 1978, p.1

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475. Louis Lasagna, William M. Wardell, Ronald W. Hansen, "Technological Innovation and Government Regulation of Pharmaceuticals in the United States and Great Britain," August 1978, Summary, p. 17.

476. Letter from Sidney M. Wolfe, M.D. and Benjamin Gordon, Health Research Group, addressed to "Letters Editor," *Newsweek*, October 6, 1978.

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481. "FDA Hastens Approval of 'Important' New Drugs," *American Pharmacy*, April, 1979, p. 16

482. Nicholas A. Ashford, Stewart E. Butler, and Eric M. Zolt, "Comment on Drug Regulation and Innovation in the Pharmaceutical Industry," February 10, 1977, p. 5.

483. J.M. Jondrow, "A Measure of the Monetary Benefits and Costs of the Regulation of Prescription Drug Effectiveness," unpublished Ph.D. dissertation, University of Wisconsin, 1972. p. 138.

484. Letter from Sidney M. Wolfe, M.D. and Benjamin Gordon, Health Research Group, addressed to Joseph Califano, May 5, 1979, p.1, footnote 3.

485. Inflation Impact Statement of Proposed Rulemaking, "Certain Flurocarbons (Chlorofluorocarbons) in Food, Food Additive, Drug, Animal Food, Animal Drug, Cosmetic and Medical Device Products as Propellants in Self-Pressurized Containers; Prohibition and Use," May 1977, p.v.

486. Final Report of the National Commission on Product Safety, June 1970.

487. 1978 Update of the National Commission on Product Safety's $5.5 billion estimate for 1970. Cited in interview with Warren Prunella, CPSC, January 16, 1978.

488. See *Annual Report*, 1979, Consumer Product Safety Commission.

489. *Id.*

490. *Lawnmowers* ($211 million) - *Briefing Paper*, "Final Standard for Walk-Behind Power Lawn Mowers," January 9, 1979. This analysis is reviewed in the text; *Arc hitectural Glass* ($67 million in 1975) - "Memo to the Commission From Alan M. Ehrlich," October 15, 1976. This $67 million figure does not include the averted social costs of pain and suffering, or estimates of a value of saved life. While the Council on Wage and Price Stability performed a rough calculation which indicated that the costs of the standard exceeded the benefits, Ehrlich states that the COWPS calculation contains inadequacies and has not supported

its conclusion. Important benefits ignored by COMPS include savings to consumers due to reduced breakage of safety glazing, possible reduction in the retail prices due to distribution efficiencies made possible by a uniform national standard, and social benefits from reduced pain and suffering; Upholstered Furniture ($470 million once all furniture is in compliance, fourteen years after the final standard is issued) - "Upholstered Furniture - Preliminary Economic Assessment of a Cigarette Ignition Std.", October, 1978.

491. Consumer Product Safety Commission v. The Anaconda Co., et. al., "Memorandum of Points and Authorities in Support of Temporary Relief, " October 27, 1977, p.11.

492. Memo to the members of the subcommittee on Oversight and Investigations from John E. Moss, Chairman, "Hearings on the Hazard Posed by "Old Technology" Aluminum Wiring Systems, June 2 and 5, 1978," p.5.

493. "U.S. Consumer Product Safety Commission Staff Report on the Beverly Hills Supper Club Fire of May 28, 1977," September 28, 1978, pp. 23-33.

494. Moss memo, see note 492, p. 6.

495. Id.

496. NEMA Engineering Bulletin, No. 44, April 21, 1952, quoted in "Memorandum of Points ....," see note 491, p.4.

497. Id.

498. Kaiser Aluminum and Chemical Corporation v. CPSC, January 26, 1976.

499. Telephone Interview with David Schmeltzer, head of compliance, Consumer Product Safety Commission, November 3, 1978.

500. Id.

501. "Memorandum of Points...," see note 491.

502. Affadavit of Robert J. Kelly, State of Maryland, County of Montgomery, sworn before Consumer Product Safety Commission, November 28, 1977, p. 1.

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504. Speech by Susan King before the FTC Workshop for Women in Atlanta, Georgia, Sept. 8, 1978.

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511. *Id.*

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515. Jack Anderson, "Lawn Mowers: A Cutting Safety Issue," *The Washington Post*, September 18, 1978.

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517. "Consumer Product Safety Commission's Regulation of TRIS: The Need for an Effective Chronic Hazards Program," Report by the House Subcommittee on Oversight and Investigations of the Committee on Interstate and Foreign Commerce, 95th Cong., 2nd session, August, 1978, p. 5.

518. *Id.*

519. W. B. Shaw, Circulation Manager, The Bureau of National Affairs, Inc. 1231 25th Street, N.W. Washington, D.C.

520. See Oversight report, see note 517, p. 26.

521. *Id.*, p. 41.

522. *Id.*

523. *Id.*, p. 40.

524. *Id.*, p. 30 and p. 29, footnote 183.

525. *Id.*, p. 42.

526. Id., p. 49.

527. See annual report, note 488, p. 3.

528. Id.

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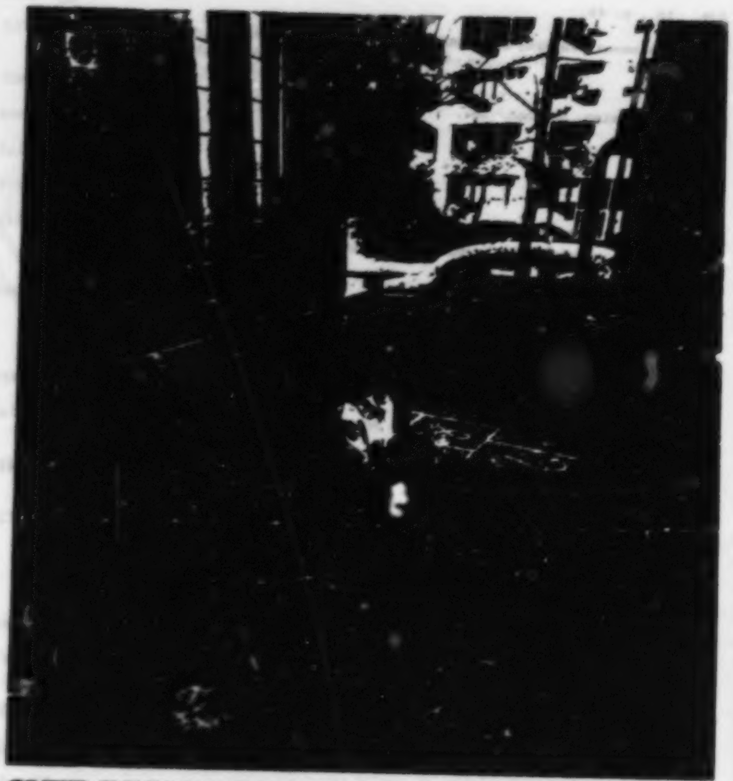
## APPENDIX A



# OVER-REGULATION COULD COST YOUR FAMILY A HOME OF YOUR OWN.

You want a home of your own where your children can play in a yard. And not in the street. But you might not be able to afford it. Because of over-regulation. In fact, last year alone reams of requirements for impact statements, permits and the like added thousands of dollars to the cost of a home. But it's not just housing. Over-regulation is making everything you want or need more expensive. Hiking the cost of health care. And even adding almost $700 to the cost of a new car. In short, you're being eaten out of house and home by federal regulations. Many of them unreasonable. And all of them costing you money. As much as $130 billion a year or $2,000 per family. We, in the cotton industry, think it's time to get more reason into regulation. For more information write: National Cotton Council, Dept. 100, Box 12285, Memphis, Tennessee 38112.

# Regulatory overkill!

# The branch that's threatening the tree.

Remember the 3 branches of government? Today, they are being overwhelmed by one the Founding Fathers never envisioned…regulatory agencies.

Since 1959 when our company was founded, the number of federal regulatory agencies has *tripled*. Hundreds of thousands of unelected, unaccountable bureaucrats are now defining public interest and Congressional "intent" as they see fit. And there are thousands more regulators at the state and local level.

A Congressional committee has found that over-regulation discourages competition, because smaller companies cannot afford the cost of keeping track of and complying with all the rules…about $3600 a year for every small businessman.

The Center for the Study of American Business estimates government *regulation* costs a family of four more than $2000 a year…that's more than 10% of their income.

We are not suggesting that all government regulations be eliminated. Some of the dollars spent have given us cleaner streams and air and provided protection to some segments of society. But too many regulators are going on "crusades" and expanding their areas of responsibility to achieve *personal* goals, as if they were a fourth branch of government.

The cost to the consumer has become too great to allow this trend of over-regulation to continue. There must be across-the-board budget cuts for all regulatory agencies. This will force regulators to establish priorities. Sunset laws must be enacted, requiring periodic review of the need for each agency. This will eliminate the "dead wood."

Putting regulation back in perspective will mean that the more than $100-billion Americans must spend to pay for it this year can be reduced and the purchasing power of every American increased. Amway Corporation, Ada, Michigan 49355.

**Amway.**

*One of a series of messages to stimulate public dialogue about significant national issues.*

INFLATION

"ESTIMATES" OF ENVIRONMENTAL CONTROL COSTS
POLLUTING INDUSTRIES

"YOU CAN SEE THAT I'M THE GOOD GUY NOW"

PROTECTING THE PUBLIC HEALTH COULD COST SOME MONEY
CRUSADER AGAINST INFLATION
INDUSTRIAL POLLUTION
GOVERNMENT CONTROLS

# Has America become shortsighted?

America once had a
vision of its future.
And that vision led us to
ecome the most productive
ation on earth, with our citzens enjoying the highest
tandard of living of any
ation in the world.
Today, inflation erodes
ur economic growth. In-
dequate capital invest-
ent limits opportunity and
ndermines our inter-
ational competitive posi-
on. Our companies are hard
ressed to keep up with ac-
elerating technological
evelopments. Productivity
s been growing much
ster in other major indus-
ial nations than it has in
e United States.
Why has American eco-
omic performance slipped?
Essentially, we seem to
ve lost sight of what truly
ives our economy and
at is required to keep our
oducts and services com-
titive in world markets.
orse, our vision of the
ture appears to have
rrowed to include only
t which is politically
hionable and expedient
the short-term.
t is politically fashion-
e, for example, to charge
t company profits are
high … are a "windfall"

… or are even "obscene." Yet profits constitute the key support for expanding company facilities, financing new research and development, replacing outmoded and inefficient equipment and, ultimately, ensuring greater productivity, higher wages and more jobs.

It's also politically fashionable to demand greater governmental "safeguards," i.e. regulations on the activities of companies. Yet, each year, government regulations cost our society — both companies and individuals — about $100 billion. Much of which could be used instead for new plants, for new products, for new research, for new technology and to create new jobs. All of which would make us more competitive in world markets.

It's politically expedient for government — in the interest of "protecting the general welfare" — to spend billions of taxpayer dollars on over-regulation without fully weighing costs against benefits. Government overspending, and the resulting federal budget deficit, remains a primary cause of our nation's most serious problem, inflation.

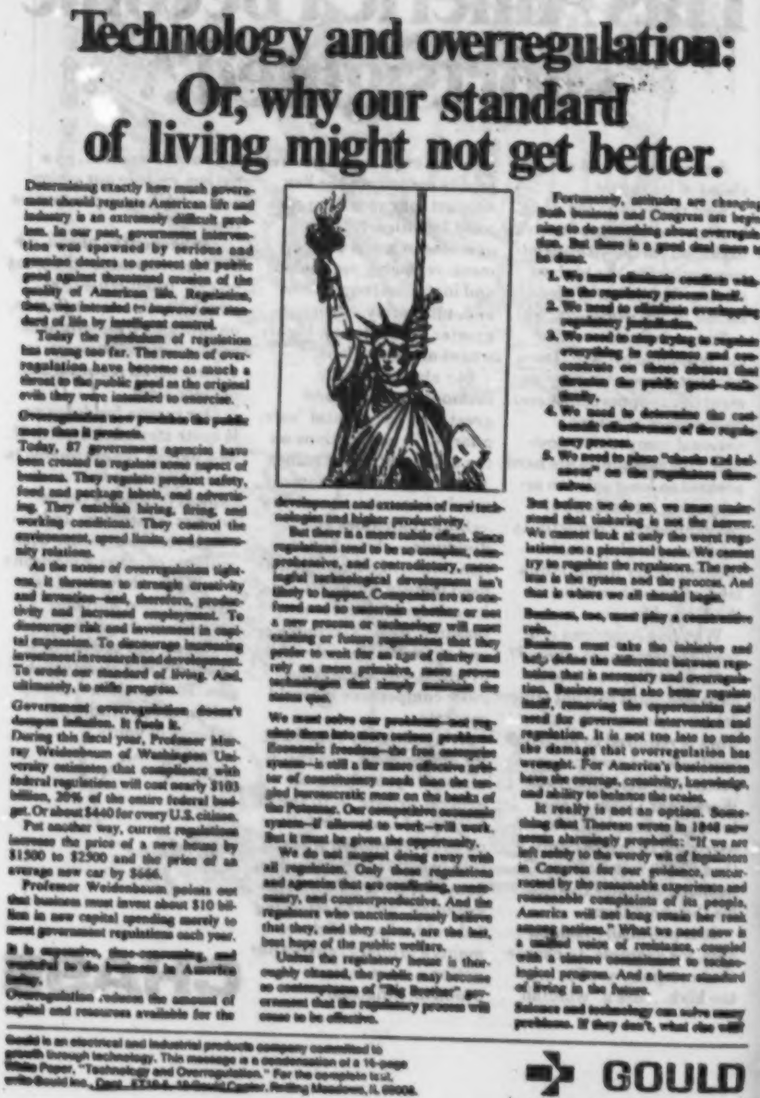
Clearly, we must, as a nation, restore our vision and, with it, our productive capacity.

In the months ahead, we at Chase intend to speak out on the "productive capacity" question: on inflation, on profits, on government regulation, on business investment, on research and development.

Our reason for doing so is quite straightforward. If, as a nation, we are unable to revitalize our productive capacity, Chase's shareholders, customers and employees — together with millions of other Americans — will pay the price. It's a price we need not, and should not, have to pay.

So, we will speak out — as loudly and clearly as we can. We'll do it in our own self interest. And, we believe, in yours.

**CHASE**



# Technology and overregulation: Or, why our standard of living might not get better.

Determining exactly how much government should regulate American life and industry is an extremely difficult problem. In our past, government intervention was spawned by serious and genuine desires to protect the public good against threatened erosion of the quality of American life. Regulation, then, was intended to *improve* our standard of life by intelligent control.

Today the pendulum of regulation has swung too far. The results of overregulation have become as much a threat to the public good as the original evils they were intended to exorcise.

**Overregulation now punishes the public more than it protects.**

Today, 87 government agencies have been created to regulate some aspect of business. They regulate product safety, food and package labels, and advertising. They establish hiring, firing, and working conditions. They control the environment, speed limits, and community relations.

As the noose of overregulation tightens, it threatens to strangle creativity and invention—and, therefore, productivity and increased employment. To discourage risk and investment in capital expansion. To discourage increasing investment in research and development. To erode our standard of living. And, ultimately, to stifle progress.

**Government overregulation doesn't dampen inflation. It fuels it.**

During this fiscal year, Professor Murray Weidenbaum of Washington University estimates that compliance with federal regulations will cost nearly $103 billion, 20% of the entire federal budget. Or about $440 for every U.S. citizen.

Put another way, current regulations increase the price of a new house by $1500 to $2500 and the price of an average new car by $666.

Professor Weidenbaum points out that business must invest about $10 billion in new capital spending merely to meet government regulations each year.

**It is expensive, time-consuming, and wasteful to do business in America today.**

Overregulation reduces the amount of capital and resources available for the development and extension of new technologies and higher productivity.

But there is a more subtle effect. Since regulations tend to be so complex, comprehensive, and contradictory, meaningful technological development isn't likely to happen. Companies are so confused and so uncertain whether or not a new process or technology will meet existing or future regulations that they prefer to wait for an age of clarity and rely on more primitive, more proven technologies that simply maintain the status quo.

**We must solve our problems—not regulate them into more serious problems.**

Economic freedom—the free enterprise system—is still a far more effective arbiter of constituency needs than the tangled bureaucratic maze on the banks of the Potomac. Our competitive economic system—if allowed to work—will work. But it must be given the opportunity.

We do not suggest doing away with all regulation. Only those regulations and agencies that are conflicting, unnecessary, and counterproductive. And the regulators who sanctimoniously believe that they, and they alone, are the last, best hope of the public welfare.

Unless the regulatory house is thoroughly cleaned, the public may become so contemptuous of "Big Brother" government that the regulatory process will cease to be effective.

Fortunately, attitudes are changing. Both business and Congress are beginning to do something about overregulation. But there is a good deal more to be done.

1. We must eliminate conflicts within the regulatory process itself.
2. We need to eliminate overlapping regulatory jurisdiction.
3. We need to stop trying to regulate everything in existence and concentrate on those abuses that threaten the public good—realistically.
4. We need to determine the cost-benefit effectiveness of the regulatory process.
5. We need to place "checks and balances" on the regulators themselves.

But before we do so, we must understand that tinkering is not the answer. We cannot look at only the worst regulations on a piecemeal basis. We cannot try to regulate the regulators. The problem is the system and the process. And that is where we all should begin.

**Business, too, must play a constructive role.**

Business must take the initiative and help define the difference between regulation that is necessary and overregulation. Business must also better regulate itself, removing the opportunities and need for government intervention and regulation. It is not too late to undo the damage that overregulation has wrought. For America's businessmen have the courage, creativity, knowledge, and ability to balance the scales.

It really is not an option. Something that Thoreau wrote in 1848 now seems alarmingly prophetic: "If we are left solely to the wordy wit of legislators in Congress for our guidance, uncorrected by the seasonable experience and reasonable complaints of its people, America will not long retain her rank among nations." What we need now is a unified voice of resistance, coupled with a sincere commitment to technological progress. And a better standard of living in the future.

**Science and technology can solve many problems. If they don't, what else will**

Gould is an electrical and industrial products company committed to growth through technology. This message is a condensation of a 16-page White Paper, "Technology and Overregulation." For the complete text, write Gould Inc., Dept. [illegible], 10 Gould Center, Rolling Meadows, IL 60008.

GOULD
An Electrical/Electronics Company

[Whereupon, at 11:35 a.m., the subcommittee adjourned, subject to the call of the Chair.]

# USE OF COST-BENEFIT ANALYSIS BY REGULATORY AGENCIES

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## WEDNESDAY, OCTOBER 24, 1979

House of Representatives, Subcommittee on Oversight and Investigations, and Subcommittee on Consumer Protection and Finance, Committee on Interstate and Foreign Commerce,

*Washington, D.C.*

'he subcommittees met, pursuant to notice, at 10:30 a.m. in room
23, Rayburn House Office Building, Hon. Albert Gore, Jr,. presid-
(Hon. Bob Eckhardt, chairman, Subcommittee on Oversight and
estigations, and Hon. James H. Scheuer, chairman, Subcommit-
on Consumer Protection and Finance).

fr. **Gore**. The subcommittees will come to order.

iood morning. I would like to call this joint hearing of the
committees on Oversight and Investigations and Consumer Pro-
ion and Finance. Today's hearing is the third in a series inves-
ting the use of cost-benefit analysis as a regulatory decision-
king tool.

n the first session, we heard from four experts on the theoretical
ects of cost-benefit analysis and its inception as a microecono-
instrument. In the second, Ralph Nader and two of his asso-
es released a year-long study analyzing the benefits of Federal
lth and safety enforcement, a macroeconomic approach which
regated the benefits of the governmental programs under con-
ration. [See p. 141.]

oday we have the advantage of hearing from four experts in
field to amplify our knowledge and facilitate our understand-
of this very timely issue.

ark Green is a lawyer and the director of Public Citizen's
gress Watch in Washington, D.C., and he is the author or editor
veral books on government and business.

r. James C. Miller III is a codirector of the American Enter-
e Institute and was an Associate Director of the Council on
e and Price Stability during the Ford administration.

r. Murray Weidenbaum is currently a resident scholar at the
rican Enterprise Institute on leave from the directorship of the
er for Study of American Business at Washington University.
Weidenbaum was an Assistant Secretary of the Treasury
ng the Nixon administration.

. Allen R. Ferguson is the president of the Public Interest
omics Center. He was formerly on the economics faculty of the
ersity of Virginia.

try to assure fairness, we have allotted 10 minutes, and only
inutes, to each witness to make his presentation and then 5

minutes for rebuttal of any of the remarks of the other witnesses. We will alert each speaker when he has 2 minutes left and then ask him to conclude when his total time is used.

When the time allotted to these debates has run, the four witnesses will be available to members of the committees and to each other for questions and further discussions. The subcommittee looks forward with interest to these presentations.

I would like to recognize now the ranking member of the Oversight and Investigations Subcommittee, Mr. Lent.

Mr. LENT. Thank you very much, Mr. Chairman.

Mr. Nader had an extra 2 hours last week when we first met on this subject. I know that we have all been looking forward to today's hearing to provide for the record extensive give and take on the use of cost-benefit analysis in regulatory decisionmaking. We are fortunate indeed to have succeeded in getting together four such distinguished panelists on the same day. I want to thank all of you for your participation.

Since the time of the Great Depression, more and more Americans have looked to Washington and the Federal Government for help or for answers to their problems. In fact, Government regulation goes back to action by the first U.S. Congress to empower the President to make rules for trade, but as the number of regulations have mushroomed, a shift in the public's attitude toward Government's role as a regulator has occurred. Americans are now more wary of government by regulation.

This shift in attitude has been reflected on Capitol Hill. Today there is growing support in the Congress for controls on the regulatory process. Sunset laws and legislative veto provisions are only two of the pending proposals which would provide greater accountability over the Federal agencies in their procedures. Because the public is now calling for a more cautious approach to government by regulation, I believe it is even more important that Members of Congress have access to tools which will enable them to make informed legislative and regulatory decisions.

I believe reliable cost-benefit analyis will be an invaluable tool to assist Congress in making these types of decisions. In fact, I see cost-benefit analysis as one means to be more responsive to the public's cry for increased oversight of the regulatory process. I trust that today's dialog and debate will contribute significantly toward a resolution of the cost-benefit controversy, so that we may then move forward rapidly in applying it to our decisionmaking.

Thank you, Mr. Chairman.

Mr. GORE. Gentlemen, we have a tradition on this subcommittee. At times it seems inappropriate but we follow it nevertheless of asking all witnesses that appear before the Oversight and Investigations Subcommittee to take the oath at the beginning of testimony. If you would not mind standing and take the oath. Do you swear the testimony you are about to give will be the truth, the whole truth, and nothing but the truth, so help you God.

[Chorus of "I do."]

Mr. GORE. Thank you very much.

Without objection, the text of the written statements that you have presented to the subcommittees will be included in the record, and during your initial 10 minutes' presentation please feel free to read any or all of your prepared statement as you see fit. But as I said, we will try to enforce the time limits, just to make sure that all participants have equal time.

Professor Weidenbaum, insofar as your work really has focused this debate in recent years, would you like to begin?

## TESTIMONY OF MURRAY L. WEIDENBAUM, PH. D., RESIDENT SCHOLAR, AMERICAN ENTERPRISE INSTITUTE FOR PUBLIC POLICY RESEARCH; MARK GREEN, PUBLIC CITIZEN'S CONGRESS WATCH; JAMES C. MILLER III, PH. D., CODIRECTOR, AMERICAN ENTERPRISE INSTITUTE FOR PUBLIC POLICY RESEARCH; AND ALLEN R. FERGUSON, PH. D., PRESIDENT, PUBLIC INTEREST ECONOMICS CENTER

Dr. WEIDENBAUM. Thank you, Mr. Chairman.

Deregulating the airlines and eliminating silly job safety regulations have created the notion that Government regulation is declining in the United States. The facts, however, support the reverse view. The pace of regulation is continuing on an upward trajectory. The number of agencies, regulatory programs, and authorizing statutes—and the budgets to carry them out—are all growing rapidly.

A very substantial further expansion of regulation already is in the Government pipeline, and I document that in my statement. [See p. 324.]

The term "regulated industry" has become archaic. Every industry in the United States is feeling the rising power of Government regulation in each major aspect of its day-to-day operations. Because of the proliferation of Government regulatory activity in recent years, we need to measure this economic phenomenon. Let us do so by focusing on the resources required to carry out regulation.

The costs that result from Government regulation of business arise in three categories: The cost of administering the regulatory agencies. This direct cost is the smallest portion; the cost of compliance by the private sector. This indirect cost is much larger and more difficult to measure. However, there is a substantial literature on individual programs which can be drawn upon to develop useful estimates; and the induced effects of regulation. This is the most extensive aspect of the impacts of regulation. Regulation has extremely substantial long-term effects on innovation, capital formation, productivity, and the structure of the economy. However, I have not attempted to develop aggregate costs of these important effects, and they are not included in the numbers that I will present.

The expansion of regulation can be seen most readily in the steady increase in the number of regulatory agencies established by Congress—from a dozen prior to 1930 to over two dozen in 1950 to a present total of 56. The most rapid expansion occurred not in the New Deal period of the 1930's, but rather during the 1970's.

The initial and direct effects of Government regulation can be measured by the budgets of the regulatory agencies themselves. These governmental outlays are the costs of regulation borne by the taxpayer. Preliminary figures for the fiscal year 1980 show a total of $6 billion in Federal expenditures to operate the 56 agencies which regulate business. That is more than a sixfold increase from the 1970 level of $866 million. But that is just the tip of the iceberg.

Every time a regulatory agency imposes a more costly—albeit less polluting—method of production on any firm, the cost of the firm's product to the consumer will tend to rise. Similar effects flow from the other regulatory efforts, including those involving product safety, job health, and hiring and promotion policies. These higher prices represent the "hidden tax" of regulation which is imposed by Government on the consumer.

At times the impact of regulation on the prices that consumers pay is obvious. The Federal Government requires producers of automobiles to incorporate a wide array of safety and environmental features. The Bureau of Labor Statistics provides each year estimates of the added price of the typical passenger automobile resulting from the safety and ecological features which were added that year in response to Federal requirements.

In my statement I give specific details on that. One point I should mention. Contrary to the allegation of some critics, the Bureau of Labor Statistics never has criticized my work. To repeat that charge is to repeat a falsehood. To repeat it deliberately is a lie, I believe.

Quite to the contrary, the Bureau of Labor Statistics has been helpful in providing my data.

For many of the newer regulatory programs, such as the Consumer Products Safety Commission, the Nuclear Regulatory Commission, and the Department of Energy, compliance costs were not available, and I carried them at zero, except for the paperwork burden. This yielded a major underestimate, and those who ignore that substantial understatement of the costs of regulation betray their bias. My estimate of the compliance costs came to $83 billion in 1976. Adding up where I could the cost of compliance in the private sector came to $63 billion in 1976. That was approximately 20 times the budgets of the agencies issuing the regulations. That is where the multiplier of 20 arose.

In the base year the costs of compliance came to 20 times the costs of the regulatory agencies, that is, on the average each dollar the Congress appropriated to operate the regulatory agencies resulted in the imposition of regulations that imposed $20 of costs on the private sector.

In a more recent report prepared for the Joint Economic Committee I updated the figures for 1976 by applying the multiplier of 20 to the budget data for more recent years. Using that approach, the aggregate costs of issuing and complying with Federal regulations comes to $121 billion in the fiscal year 1979, or about $500 per capita.

There is a very current example of why this figure may be too low. Although I could not quantify the costs imposed by energy regulation, Prof. Kenneth Arrow, a recipient of the Nobel Prize in economics, recently has done so for a portion of the Department of Energy. He estimates on the most conservative basis that direct costs of petroleum price regulations are at least $2.5 billion a year. Professor Arrow notes that other costs of petroleum price controls "could double the estimate and this is not all." He points out that the private sector costs of carrying out the administrative duties and obligations of energy regulation may be as much as $500 million annually, not counting the costs created by regulatory distortions in business transactions and competitive behavior, and he goes on to identify other costs.

But, Mr. Chairman, members of the committee, some of the other effects of the flow from Government regulation, which are not included in my cost estimates, are the most powerful. These include the new and improved products which are not available to the public because of regulation.

One truly hidden cost of regulation is reduced rates of introduction of new products. Prof. William Wardell of the medical school of the University of Rochester has documented this situation. Although cardiovascular disease, heart attack and stroke has been the main cause of death in the United States for many years, the FDA continues to block the availability of new and improved drugs in this area. In the case of one drug alone, the beta-blocker practolol, which could be used to prevent heart attacks and coronary death, Dr. Wardell states that if this drug were approved for use in the United States, it would save—and this is his estimate—"at least 10,000 lives a year."

I cite other examples of FDA regulation which results in costs, not dollar costs to the consumer, but costs in terms of illness and death that would have been foregone if new and improved pharmaceuticals were more readily available to the American public.

Another hidden cost of regulation is the new investments in plant and equipment that are not made because one-tenth of the funds for plant equipment must be diverted to meeting Government-mandated social requirements. This is a major loss of productivity, and a continuing source of inflation.

Another hidden cost are the workers that are not hired because Federal regulations have priced them out of labor markets, and I provide detail there. Another cost is the squeeze on small business as they find that the burdens of Government regulations fall on them disproportionately hard, and I cite a recent study at our center showing that in almost every case, it is the small business, the smaller firm, that gets harder hit by Government regulation.

Finally, we have the truly immeasurable effects of Government regulation on the basic entrepreneurial nature of the private enterprise system. Basically, these arise because management attention is diverted from traditional product development, production and marketing to meeting Government-imposed requirements, and a significant bureaucratic cessation of business activity results. The ultimate costs of excessive Government involvement in the economy are the factories that are not built, the jobs that do not get created, the goods and services that do not get produced, and the incomes that are not generated.

But why do economists take measurements of economic phenomenon? Not because numbers are an end to themselves, but because the cost data showed the importance of the activity, and hopefully the information that I and my colleagues have generated will help to shift the public dialog onto higher ground.

The pertinent policy questions are no longer are you for or against clean air or safe products or other such absolutes. Increasingly, the public discussions are in terms of such less emotional and long-neglected questions as how well is the regulatory process working. Are there better ways of achieving public desires.

Finally, the availability of information on the costs of regulation is an important step in reforming the regulatory process. The presence of cost data inevitably leads to proposals for benefit-cost analysis, cost-effectiveness analysis and other analytical approaches.

The critics of the analytical approach forget that benefit-cost analysis is a neutral concept. It gives as much weight to a dollar of benefits as to a dollar of cost, but the implementation of such analysis needs considerable attention, and I give it that in my formal statement.

As a minimum, I urge the Congress to endorse the kind of commonsense embodied in a recent court decision which stopped Archer from issuing new benzine regulations. This is the court's language: "Although the agency does not have to conduct an elaborate cost-benefit analysis, it does have to determine whether the benefits expected from the standards bear a reasonable relationship to the costs imposed by the standards."

There are alternatives to regulation, but I will skip over that part of my statement and get to—although I call the committee's attention to the portion where I point out that it is unrealistic to simply assume that every action in the health and safety area actually improves human health and safety, and I cite one case among many where the regulatory agency—this was the whitefish ruling of FDA which was overturned by the court—generated costs with no offsetting benefits.

I would like to present finally and briefly a comment on the Nader group report, which as you know discusses my work in great detail. The Nader group report does have the outer trappings of research, 529 footnotes. Nevertheless, it fails to meet the basic standards of scholarship. A fair and honest report would not have limited itself to criticizing those of my cost estimates which they thought to be too high, which is of course an appropriate activity. A fair and honest report, in contrast to a biased level brief, would have gone on to deal with the cost estimates which clearly are too low.

In my research I took a position of caution, and where I was not satisfied with the data, I carrried the costs of compliance at zero. That is surely a serious underestimate of the costs of regulation. Thus a fair and honest report would have pointed out that I did not show any compliance cost for the Department of Energy. The Nader group ignored that. A fair and honest report would have pointed out that I did not show any compliance costs to the Nuclear Regulatory Commission. The Nader group ignored that. That same holds true for many other regulatory agencies where I did not develop costs of compliance. I have a long list. It will exhaust my time if I read that list. I would just like to incorporate it in the record.

If the Nader group were sincerely interested in estimating the correct costs of regulation, they would have tried to develop estimates where I could not, but a biased lawyer's brief, in contrast to a serious piece of economic research, ignores matters that do not support its preconceived position.

In striking contrast, my own research pointed out its limitations, and the need for additional research.

The saddest aspect of the Nader group report, and I say sad, is the great emphasis on vituperation, on the nastiness of personal attacks on scholars with whom they disagree on a given issue. Let the record show that the Nader group never questioned my integrity or my intellectual independence on those occasions where they agreed with my views and cited my work to support their position, and I am holding in my hand the Ralph Nader Study Report on Regulation, which cites me as an authority on some of the occasions. By the way, the main author of this report is Mark Green.

I thank the committee for its indulgence.

[Testimony resumes on p. 353.]

[Dr. Weidenbaum's prepared statement and attachment follow:]

# THE CONTINUING NEED FOR REGULATORY REFORM

By Murray L. Weidenbaum

Testimony Prepared for The House of Representatives, Committee on Interstate and Foreign Commerce, Washington, D.C., October 24, 1979

Deregulating the airlines and eliminating silly job safety regulations have created the notion that government regulation is declining in the United States. The facts, however, support the reverse view. The pace of regulation is continuing on an upward trajectory. The number of agencies, regulatory programs, and authorizing statutes -- and the budgets to carry them out -- are all growing rapidly.

A very substantial further expansion of regulation already is in the government pipeline. That is because many laws passed in recent years are only in the early growth stages of implementation. As the U.S. Council on Environmental Quality pointed out in its latest annual report, current estimates of the burden of regulation "do not yet include many costs associated with the hazardous waste section of the Resource Conservation and Recovery Act of 1976, the Toxic Substances Control Act of 1976, and 1977 Amendments to the Federal Water Pollution Control Act, and the 1977 Amendments to the Clean Air Act." For most of this legislation, the Council pointed out, EPA is still in the process of developing its final regulations.[1]

Similar patterns prevail in other areas. The Occupation Safety and Health Administration is promulgating a general carcinogenic proposal which, unless revised in light of substantial criticism, may generate compliance costs

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NOTE: The author is a scholar in residence at the American Enterprise Institute, on leave from Washington University. The views expressed are entirely personal.

greater than the total existing array of OSHA standards.[2] The National Highway Traffic Safety Administration is pursuing mileage goals at a pace which will test the outer limits of the survival capacity of the relatively few American companies that still produce motor vehicles.[3] Surely, some perspective is useful.

The term "regulated industry" has become archaic. Every industry in the United States is feeling the rising power of government regulation in each major aspect of its day-to-day operations.[4] Because of the proliferation of government regulatory activity in recent years, we need to measure this phenomenon. Let us do so by focusing on the resources required to carry out regulation.

## The Costs of Government Regulation

The costs that result from government regulation of business arise in three categories:

1. *The cost of administering the regulatory agencies*. This direct cost is the smallest portion.

2. *The cost of compliance by the private sector*. This indirect cost is much larger and more difficult to measure. However, there is a substantial literature on individual programs which can be drawn upon to develop useful estimates.

3. *The induced effects of regulation*. This is the most extensive aspect of the impacts of regulation. Regulation has extremely substantial long-term effects on innovation, capital formation, productivity, and the structure of the economy. However, I have not attempted to develop aggregate costs of these induced effects.

## The Direct Cost of Regulation

The expansion of regulation can be seen most readily in the steady increase in the number of regulatory agencies established by Congress -- from a dozen prior to 1930 to over two dozen in 1950 to a present total of 56. The most rapid expansion occurred not in the New Deal period of the 1930s, but rather during the 1970s.[5]

The initial and direct effects of government regulation can be measured by the budgets of the regulatory agencies themselves. These governmental outlays are the costs of regulation borne by the taxpayer. Preliminary figures for the fiscal year 1980 show a total of $6 billion in federal expenditures to operate the 56 agencies which regulate business. That is more than a six-fold increase from the 1970 level of $866 million.

## The Indirect Cost of Regulation

Ever time the EPA imposes a more costly (albeit less polluting) method of production on any firm, the cost of the firm's product to the consumer will tend to rise. Similar effects flow from the other regulatory efforts, including those involving product safety, job health, and hiring and promotion policies. These higher prices represent the "hidden tax" of regulation which is imposed by government on the consumer.

At times the impact of regulation on the prices that consumers pay is obvious. The federal government requires producers of automobiles to incorporate a wide array of safety and environmental features. The Bureau of Labor Statistics provides each year estimates of the added price of the typical passenger automobile resulting from the safety and ecological features which were added that year in response to federal requirements. I have summed these items and put them on a consistent price basis. Through 1978, the cumulative cost increase per vehicle of these mandated features came to $666.[6] Contrary to the allegations of some critics, the Bureau of Labor Statistics never has criticized my work. Quite to the contrary, they have been helpful in providing these data.

Numerous other costs in the private sector result from the activities of the regulatory agencies. In some cases -- EPA and OSHA -- comprehensive annual surveys of the cost of compliance are available. The McGraw-Hill Department of Economics reports that capital outlays made to meet OSHA standards are in the neighborhood of $3.5 billion a year.

The U.S. Council on Environmental Quality (CEQ) reports that the cost of pollution abatement expenditures was $19.3 billion in 1977, above and beyond those substantial outlays that would have been made in the absence of government legislation.

For many of the older regulatory agencies -- such as ICC and CAB -- independent scholars have estimated the costs for all or a portion of the regulations. My colleagues and I at the Center for the Study of American Business at Washington University culled from the literature what we considered to be the best estimates, usually taking the lower end if a range was offered, and putting the results on a consistent price basis.

For many of the newer regulatory programs, however, such as the Consumer Product Safety Commission, the Nuclear Regulation Commission, and the Department of Energy, compliance costs were not available and we carried them at zero, except for the paperwork burden. This yielded a major underestimate and those who ignore that substantial understatement of the cost of regulation betray their bias. My estimate of the compliance costs came to $63 billion in 1976, or approximately twenty times the budgets of the agencies issuing the regulations.[7]

In a more recent report prepared for the Joint Economic Committee, I updated the figures for 1976 by applying the multiplier of 20 to 1 to the budget data for more recent years. Using that approach, the aggregate cost of issuing and complying with federal regulations comes to $121 billion in the fiscal year 1979, or about $500 for each man, woman, and child in the United States.[8]

There is a very current example of why this figure may be too low. Although I could not quantify the costs imposed by energy regulation, Professor Kenneth Arrow, a recipient of the Nobel Prize in economics, recently has done so for a portion of the Department of Energy. He estimates, on the most conservative basis, that the direct costs of petroleum price controls are "at least $2.5 billion a year." Professor Arrow notes that other costs of petroleum price controls "could double the estimate. And this is not all." He points out that the private-sector costs of carrying out the administrative duties and obligations may be as much as $500 million annually, not counting the costs created by regulatory distortions in business transactions and competitive behavior. More subtle costs, notes Arrow, arise from the unambiguous support given OPEC by Department of Energy regulations because they discourage domestic production and subsidize imports.[9]

## The Induced Effects of Regulation

Some of the other effects that flow from the government regulation, which are not included in my cost estimates, are the most powerful. Those induced impacts of regulation include the following:

The new and improved products which are not available to the public because of regulation. One hidden cost of government regulation is a reduced rate of introduction of new products. The longer it takes for a new product to be approved by a government agency the less likely that the new product will be created. In any event, innovation will be delayed. The impacts are most conspicuous in the pharmaceutical area.

Professor William Wardell of the medical school of the University of Rochester has documented this situation. Although cardiovascular disease (heart attack and stroke) has been the main cause of death in the United States for many years, the FDA continues to block the availability of new and improved drugs in this area. In the case of one drug alone -- the beta-blocker practolol which could be used to prevent heart attacks and coronary death -- Dr. Wardell states that if this drug were approved for use in the United States, it would save "at least 10,000 lives a year."[10]

In the area of heart attack prevention, one FDA regulator blocked even research on the problem. In 1969, this employee prevented E. R. Squibb & Sons from conducting a controlled study to determine whether aspirin in normal doses would prevent heart attack and death in patients who already had had a heart attack and hence had a high risk of having another. FDA even wanted to close down Squibb's entire clinical research program on all drugs if the firm went ahead with its aspirin project. The company informally dropped the research. Five years later, the National Institute of Health initiated a $16 million study, paid by tax money, of precisely the same effects of aspirin. According to Dr. Wardell, if the study confirms what has long been suspected about the beneficial impact of aspirin on heart disease, then the costs of delay by FDA will have been extremely high -- "costs of illness, lost days of work, burdens on families, and death."[11]

The new investments in plant and equipment that are not made because over one-tenth of the funds must be diverted to meeting government-mandated social requirements. The resultant loss of productivity has been measured for environmental and job safety by Edward Denison of the Department of Commerce at about one-fourth of the potential average annual increase in productivity.[11a]

Capital formation and productivity are also adversely affected by the uncertainty about the future of regulations governing the introduction of new processes and products. In assessing the overall impact of government regulatory activity on the establishment of a new energy industry, a task force of the U.S. Energy Resources Council concluded, "some of these requirements could easily hold up or permanently postpone any attempt to build and operate a synthetic fuels plant."[12] The recent cancellation of the Sohio pipeline project provides evidence that the regulatory uncertainties are not limited in their adverse impacts to new technology.

It is sad that Congress is having to set up an Energy Mobilization Board to cut through the regulatory thicket established under earlier congressional statutes. More carefully written environmental statutes would surely be a preferred alternative.

The workers that are not hired because federal regulations have priced them out of labor markets. One increase in the statutory minimum wage reduced teenage employment in the United States by over 200,000 below what it otherwise would have been.[13] Teenage unemployment is the highest of any group in the nation.

The squeeze on small business as they find that the burdens of government regulation fall on them disproportionately hard. Forcing a small firm to fill out the same specialized forms or to develop the same type of equipment as a large company with highly-trained technical staffs placed a much greater burden on that smaller enterprise.[14]

The immeasurable effects of government regulation on the basic entrepreneurial nature of the private enterprise system. To the extent that management's attention is diverted from traditional product development, production, and marketing concerns to meeting governmentally imposed social requirements, a significant bureaucratization of business activity results. The ultimate costs of excessive government involvement in the economy are the factories that are not built, the jobs that do not get created, the goods and services that do not get produced, and the incomes that are not generated.

## Approaches to Regulatory Reform

Economists are prone to take measurements of economic phenomena but the numbers are not an end in themselves. First of all, the cost data show the public and the government the economic importance that regulation has assumed.

Secondly, this information helps to shift the public dialogue onto higher ground. The pertinent policy questions are no longer, "Are you for or against clean air or safe products?" or other such absolutes. Increasingly, the public discussions are in terms of such less emotional and long-neglected questions as "How well is the regulatory process working?" and "Are there better ways of achieving the public's desires?"

Finally, the availability of information on the costs of regulation is an important step in reforming the regulatory process. The presence of cost data inevitably leads to proposals for benefit/cost analyses, cost-effectiveness studies, risk-benefit evaluations, and similar analytical approaches to what in the past too often had been viewed as emotional issues. Hopefully, legislation reforming regulatory practices will mandate such analytical techniques and thus improve the cost -- and benefit -- data that are used in the regulatory process.

The critics of the analytical approach forget that benefit/cost analysis is a neutral concept. It gives as much weight to a dollar of benefits as to a dollar of costs. The implementation of benefit/cost analysis needs considerable attention. After all, a reluctant agency can merely go through the motions of studying the effects of its action and proceed as it originally intended. An agency not directly involved in regulation -- such as the General Accounting Office -- should set government-wide standards, concepts, and methods of performing economic evaluations of regulations, including the estimation of benefits and costs. Where a dollar sign cannot be placed on the benefits, reliance can be placed on cost/effectiveness analysis, which is a search for least-cost solutions.

At a minimum, the Congress should endorse the kind of common sense that was embodied in the recent court decision which stopped OSHA from issuing new benzene regulations. The court's language is instructive: "Athough the agency does not have to conduct an elaborate cost/benefit analysis . . . it does have to determine whether the benefits expected from the standards bear a reasonable relationship to the costs imposed by the standard."[15]

## Alternatives to Regulation

Government regulations are not the only means of accomplishing public objectives. Rather than issuing detailed regulation limiting discharges into waterways, for example, the government could levy substantial taxes on those discharges. By increasing the price of high polluting products, taxation would use the price system to encourage producers and consumers to shift to less polluting goods and services.

In the case of the traditional type of regulation (as of airlines, trucking, and railroads) a greater role should be given competition and market forces. Unlike the newer forms of regulation, the older forms of regulation often mainly protect existing firms from competition by new entrants.

In the area of consumer protection, an information strategy is a sensible alternative to compulsory product standards. For the many hazards that consumers voluntarily subject themselves to, the most important need is to improve knowledge of the risks involved. In their daily lives, citizens rarely opt for zero risk alternatives but trade off between speed and safety, for example. Interestingly enough, the information approach usually is favored in consumer surveys, although not by the most vehement representatives of the self-styled public interest groups.

Any realistic appraisal of government regulation must acknowledge that important and positive benefits have resulted from many of the regulatory activities -- less pollution, fewer product hazards, reducing job discrimination, and other socially desirable goals of our society. But that does not justify government attempting to regulate every facet of private behavior. A reasonable approach to this important problem requires great discrimination.

in sorting out the hazards that it is important to regulate from the kinds of lesser hazard that can best be dealt with by the normal prudence of consumers, workers, and business firms.[16]

Finally, it is unrealistic to simply assume that every regulatory action in the health and safety area actually improves human health and safety. Often it is not a question of how high the cost, but whether there is any benefit at all. Take the regulation on the processing of smoked white fish which FDA promulgated in 1977, ostensibly to reduce the danger of botulism from eating improperly processed fish. But was there any danger? Since 1963, not a single case of botulism has been reported involving commercially prepared white fish. Moreover, the industry contended that if they followed FDA's cooking procedures, the fish would be so tasteless that nobody would buy it.

Because FDA ignored their complaint, it took an appeal to the U.S. Court of Appeals to get the agency to back off. If the court had not intervened, FDA would have continued enforcing a regulation which produced only costs and no benefits. It did not take a very complicated analysis to figure out that the white fish standard would flunk the most elementary benefit/cost test.[17]

## Postscript: Comment on the Nader Group Report

The Nader Group report has the outer trappings of research (529 footnotes), but it fails to meet the basic standards of scholarship.[18]

A fair and honest report, for example, would not have limited itself to criticizing those of my cost estimates which they thought to be too high.

A fair and honest report -- in contrast to a biased legal brief -- also would have dealt with the cost estimates which clearly are too low.

In my research, I took a position of caution and, where I was not satisfied with the available data, I carried the cost of compliance at zero, which is surely a serious underestimate of the costs of regulation.

Thus a fair and honest report would have pointed out that I did not show any compliance costs for the Department of Energy. The Nader group ignored that.

A fair and honest report would have pointed out that I did not show any compliance costs for the Nuclear Regulatory Commission. The Nader group ignored that.

The same holds true for many other regulatory agencies where I did not develop costs of compliance -- the Consumer Product Safety Commission, Mining Enforcement and Safety Administration, National Transportation Safety Board, Customs Service, Bureau of Alcohol, Tobacco and Firearms, Federal Railroad Administration, Drug Enforcement Administration, Antitrust Division, Department of Housing and Urban Development, Packer and Stockyards Administration, Animal and Plant Health Inspection Service, Federal Maritime Administration, Commodity Future Trading Commission, Comptroller of the Currency, and Federal Deposit Insurance Corporation.

If the Nader group were sincerely interested in estimating the correct cost of regulation, they would have tried to develop estimates where I could not. But a biased lawyers brief -- in contrast to a serious piece of economic research -- ignores matters that do not support its preconceived position. In striking contrast, my own research pointed out its limitations and the need for additional research.

The saddest aspect of the Nader group report is the great emphasis on vituperation, on the nastiest of personal attacks on scholars with whom they disagree on a given issue. Let the record show that the Nader group never questioned my integrity and intellectual independence on those occasions where they agreed with my views and cited my work to support their position.[19]

## FOOTNOTES

[1] U.S. Council on Environmental Quality, Environmental Quality, *Ninth Annual Report*, Washington, D.C., Government Printing Office, 1979.

[2] American Industrial Health Council, *Preliminary Estimates of Direct Compliance Costs and Other Economic Effects of OSHA's Generic Carcinogenic Proposal on Substance Producing and Using Industries*, Scarsdale, NY, 1978.

[3] Kenneth W. Clarkson, et al, "Regulating Chrysler Out of Business?" *Regulation*, September/October, 1979.

[4] See M. L. Weidenbaum, *The Future of Business Regulation*, New York, Amacom, 1979.

[5] Kenneth Chilton, *A Decade of Rapid Growth in Federal Regulation*, St. Louis, Missouri, Washington University, Center for the Study of American Business, 1979.

[6] See Weidenbaum, p. 13.

[7] M. L. Weidenbaum and Robert De Fina, *The Cost of Federal Regulation of Economic Activity*, Washington, D.C., American Enterprise Institute, 1978.

[8] M. L. Weidenbaum, *The Cost of Government Regulation of Business*, Joint Economic Committee Print, Washington, D.C., Government Printing Office, 1978.

[9] Kenneth J. Arrow and Joseph P. Kalt, "Why Oil Prices Should Be Decontrolled", *Regulation*, September/October 1979.

[10] William Wardell, "More Regulation or Better Therapies?" *Regulation*, September/October 1979.

[11] *Ibid*, pp. 26-27.

[11a] Edward F. Denison, "Effects of Selected Changes in the Institutionalized and Human Environment Upon Output Per Unit of Input," *Survey of Current Business*, January 1978.

[12] Synfuels Interagency Task Force, *Recommendations for a Synthetic Fuels Commercialization Program*, Report submitted to the President's Energy Resources Council, Washington, D.C., Government Printing Office, 1975.

[13] James F. Ragan, Jr., *Minimum Wages and the Youth Labor Market*, St. Louis, Washington University, Center for the Study of American Business, 1977.

[14] Kenneth W. Chilton and M. L. Weidenbaum, *Federal Government Regulation and Small Business Performance*, St. Louis, Washington University, Center for the Study of American Business, 1979.

[15] *American Petroleum Institute* v. *OSHA*, No. 78-1253, (5th Circuit, October 5, 1978).

[16] See Charles L. Schultze, *The Public Use of Private Interest*, Washington, D.C., Brookings Institution, 1977.

[17] *U.S.* v. *Nova Scotia Food Products Corporation*, United States Court of Appeals, Second Circuit, 1977, 568 F. 2d 240.

[18] Corporate Accountability Research Group, *Business War on the Law*, 1979.

[19] Mark J. Green, editor, *The Monopoly Makers: The Report on Regulation and Competition*, Viking Press, 1973.

# BENEFIT-COST ANALYSIS OF GOVERNMENT REGULATION

By Murray L. Weidenbaum

A Statement before the Committee on Interstate and Foreign Commerce,
U.S. House of Representatives, Washington, D.C., October 23, 1979

The motive for incorporating benefit-cost analysis into public decision making is to lead to a more efficient allocation of government resources by subjecting the public sector to the same type of quantitative constraints as those in the private sector. In making an investment decision, for example, business executives compare the total costs to be incurred with the total revenues expected to accrue. If the expected costs exceed the revenues, the investment is usually not considered worthwhile. If projected revenues exceed costs, further consideration is usually given to the proposal, although capital constraints require a further sorting to determine the most financially attractive investments.

The government agency decision maker, however, does not now face the same type of economic constraints. If the costs and other disadvantages to society of an action by an agency exceed the benefits and other advantages, that situation may not have an immediate adverse impact on the agency, as would be the case if the private business executive made a decision error. In fact, such analytical information rarely exists in the public sector so that, more often than not, the governmental decision maker is not aware that he or she is approving a regulation that is economically inefficient.

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Mr. Weidenbaum is a resident scholar at the American Enterprise Institute, on leave from Washington University. He is indebted to James C. Miller III for numerous helpful suggestions. The views expressed are entirely personal.

In requiring agencies to perform benefit-cost analysis, the aim is to make the government's decision-making process more effective, presumably eliminating those regulatory actions which, on balance, generate more costs than benefits. This result is not assured by benefit-cost analysis, since political and other important but subjective considerations may dominate and result in actions which are not economically efficient, but which are desired on grounds of equity or income distribution. Yet benefit-cost analysis can provide valuable information for government decision-makers.

## The Economic Rationale

It may be useful to consider briefly the economic rational for making benefit-cost analyses of government actions. Economists have long been interested in identifying policies that promote economic welfare, specifically by improving the efficiency with which a society uses its resources.

Benefits are measured in terms of the increased production of goods and services. Costs are computed in terms of the foregone benefits that would have been obtained by using those resources in some other activity. The underlying aim of benefit-cost analysis, therefore, is to maximize the real value of the social income, usually measured by the GNP. For many years, benefit-cost analysis has been applied by certain federal agencies (such as the Corps of Engineers and the Bureau of Reclamation) to evaluate prospective projects.

Despite important operational difficulties, including that of choosing an appropriate discount rate which would correspond to a realistic estimate of the social cost of capital, these analyses have helped to improve the allocation of government resources. They have served as a partial screening device to eliminate obviously uneconomical projects -- those for which prospective gains are clearly less than estimated costs. The analyses also have provided some basis for ranking and comparing projects and choosing among alternatives. Perhaps the overriding value of benefit-cost analysis has been in demonstrating the importance of making relatively objective economic evaluations of essentially political actions and perhaps narrowing the area in which subjective factors dominate. Thus, if economically inefficient programs are approved, at least government decision makers know the price that is being paid for those actions.

## Applying Analysis to Regulation

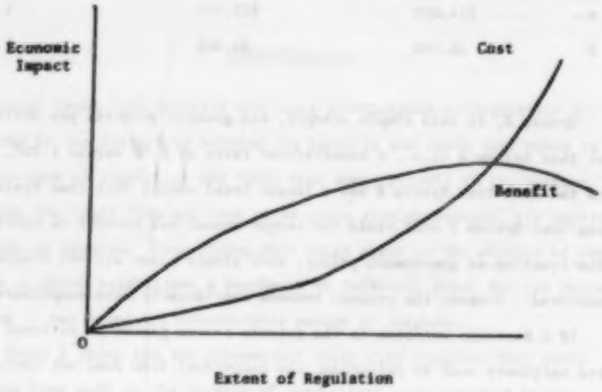
Figure 1 shows the basic relationship of costs and benefits that tends to hold for most varieties of regulatory programs. Typically, the initial regulatory effort -- such as cleaning up the worst of the pollution in a river -- may well generate benefits greater than costs. But the resources required to achieve additional cleanup become disproportionately high, and at some point the added benefits may be substantially less than the added costs. For example, a study of the impact of environmental controls on the fruit and vegetable processing industry revealed that it costs less to eliminate the first 85 percent of the pollution created than the next 10 percent. Similarly, in beet sugar plants, it costs more than $1 a pound to reduce BOD -- a measure of the oxygen required to decompose organic wastes -- up to a level where 30 percent of pollution is eliminated. But it costs an additional $20 for a one pound reduction at the 65 percent control level and an added $60 for a one pound reduction when over 95 percent control is achieved,

A more aggregate comparison is equally telling. The pulp and paper industry spent $5 billion between 1970 and 1978 complying with federal clean water standards, and achieved a 95 percent reduction in pollution. But to reach the new reduction goal proposed by EPA -- 98 percent by 1984 -- would cost a further $4.8 billion, a 160 percent increases in costs to achieve a 3 percent improvement in water quality. Thus, it is important to look beyond the mere relationship of the total costs and the total benefits of a proposed government undertaking to the additional (margin) benefits and costs that would result from each extension or addition to the government activities in a given field.

Ultimately, if the extent of regulatory activity goes unchecked, the result could be an excess of total costs over total benefits. Thus, benefit-cost analyses should be viewed as a tool for identifying the optimum amount of regulation, rather than merely a means of debating the pros and cons of regulation in general. To an economist, "overregulation" is not an emotional term; it is merely the shorthand for the regulatory activities where the costs to the public are greater than the benefits.

Figure 1

BENEFIT/COST ANALYSIS OF REGULATION



When there is more than one alternative for attaining a regulatory goal, benefit-cost analysis also can be used to compare the various methods and help to choose the most attractive. Consider the following hypothetical example: Suppose a government agency wishes to control the amount of pollutants a factory is spilling into a river. Assume present technology allows for two possible means of reducing the pollution, System A and System B, of which System B is costlier, but more effective (see Table 1).

Table 1

APPLYING BENEFIT/COST ANALYSIS

| System | Total Annual Cost | Total Annual Benefits | Benefit/Cost Ratio |
|---|---|---|---|
| A | $14,000 | $17,500 | 1.25 |
| B | 26,000 | 34,000 | 1.38 |

System B, in this simple example, has greater benefits per dollar spent than System A (i.e., a benefit/cost ratio of 1.38 versus 1.25). Despite the fact that System B has a larger total annual cost than System A, we see that System B will yield the larger annual net benefit to society. In the creation of government policy, such simply cases are not frequently encountered. Indeed, the process becomes considerably more complicated.

If a business decision in the private sector places an external burden on its neighbors such as pollution, the individual firm does not include such a cost in its accounting or its decisions, since it does not bear the burden. Public sector decision makers, however, must or at least ought to consider the effects of a decision on the entire society. Because their vantage point is the nation as a whole, government regulation -- unlike their private sector counterparts -- should attempt to include all costs and benefits, including those external to the government itself.

The agencies should do so because most regulatory actions have indirect effects on the economy. For example, requiring safety belts in automobiles has a direct impact on the cost of automobiles and on sales in the safety belt industry. But it also influences the severity of auto accidents and has a ripple effect on the suppliers of the safety belt industry and their suppliers, and so on. If a regulatory decision is to be a good one, these indirect effects, as well as the direct impacts, must be taken into account.

## Quantification

In general terms, the benefits and costs attributable to regulation are measured by the difference between the benefits and costs that occur in the presence of regulation and those that would prevail in its absence. Although the basic idea may seem to be quite straightforward, its application can be complex. Determining what would occur in the absence of regulation -- which establishes a benchmark or reference point for the calculations -- may involve a considerable amount of judgment.

Table 2 shows how the incremental costs (the expenses that would not have been made in the absence of regulation) were computed in one study of water pollution control. It is interesting to note that the bulk of the costs apparently would have been undertaken voluntarily.

Table 2

CALCULATION OF INCREMENTAL COST OF REGULATION

| Steps | Example |
|---|---|
| Company identifies an action taken to comply with a specific regulation. | Installation of waste-water pretreatment system to remove 99 percent of pollutants in compliance with Title 40 CFR, Chapter 1, Part 128. |
| Would action have been taken otherwise? | Pretreatment system without Title 40 would have been designed to remove 95 percent of pollutants. |
| What was the cost of the action? | $1,200,000 (from fixed-asset ledger data). |
| How much would the action that would have been taken in the absence of regulation have cost? | $800,000 (the cost of installing a 95 percent system). |
| What was the incremental cost? | $1,200,000 - $800,000 = $400,000. |

SOURCE: Regulation, July/August, 1979, p. 21.

Sometimes the indirect effects of regulation may be as important as the direct. Consider, for example, the question of mandatory standards to ensure the production of less hazardous consumer products. Suggestions have been made from time to time to require more protection in helmets and other recreational equipment used in playing football. Those using the safer helmets would be expected to receive the benefit of fewer or less severe injuries. However, such a safety standard could impose substantial costs on lower income youngsters. Perhaps of greater concern, the standards might even contribute to more injuries since the price increases will result in more people playing football without any protective equipment at all. This example illustrates another basic thrust of benefit-cost analysis -- to view the proposed government action not only from the viewpoint of the initial impact on the business firm but from the vantage point of the ultimate effects on the consumer.

A large but difficult to measure type of regulatory cost is a grouping that economists refer to as "deadweight losses." Regulation often limits the range of permissible prices, practices, or processes. Those legal restrictions may inhibit the most productive use of resources. The loss of the higher output that would result in the absence of the regulatory activity -- those "deadweight losses" -- arises from producing an inefficient combination of output as well as producing goods and services with an inefficnet mix of inputs, or both. For example, if regulated shipping rates result in freight moving by railroad that could have been hauled at lower real cost by truck, the total efficiency of the economy is reduced.

When political judgment suggests that it is not feasible or inappropriate to put a dollar sign on the benefits, analysis of a benefit/cost variety can still be helpful by ranking the cost/effectiveness of alternative approaches. This methodology, which was originally developed for military programs, estimates the dollar cost of a variety of different ways of accomplishing a given objective. Cost/effectiveness analyses permit policymakers to identify least-cost solutions. In this more limited approach, the analyst takes the objective as something worth accomplishing in the first place. In the regulatory field, this approach may be particularly useful in dealing with programs to reduce personal hazards. Instead of dealing with such imponderables as the cost of a human life, the emphasis shifts to identifying those regulatory approaches that will maximize the lives saved or pain avoided from a given use of resources. Rather than a "green eyeshade" approach, such attempts at objective analysis show true compassion for our fellow human beings by making the most effective use of the limited resources that are available to society.

## Discounting

A regulatory action today has an impact not only in the present but also in the future. It is necessary, therefore, to value future costs and benefits less than costs and benefits immediately available -- the basic notion being that a given benefit is worth more today than tomorrow, and a given cost is less burdensome if borne tomorrow than if borne today (this is a restatement of the economic principle that a dollar received today is worth more than a dollar received tomorrow because, meanwhile, the funds or resources are invested and can earn a return). For this reason, we discount the value so that benefits and costs incurred in the future have less weight in our current decision than presently received benefits and costs.

This practice is important in evaluating regulatory actions. If the total costs and benefits of two actions appear equal, yet for one of the actions most of the benefits occur at the end of five years, as opposed to immediate benefits for the other action (with the equal costs occurring currently), then the preferred alternative is the one whose benefits occur immediately. We value this action more because the value of a benefit occurring in five years is less than the value of the same benefit today. Discounting of the future thus implies that the timing of any proposed action's costs and benefits is an important consideration in its evaluation.

Assuming we are able to quantify all the costs and benefits in a given instance, it is then necessary to discount correctly the benefits and costs accruing to future periods. The correct discount rate (r) can be crucial, as is clear in the highly simplified, two-period example shown in Table 3.

Table 3

THE ROLE OF INTEREST RATES

| Plan | Benefit Period 1 | Benefit Period 2 | Cost Period 1 | Discounted Benefit in Period 1 | |
|---|---|---|---|---|---|
| | | | | r = 10% | r = 5% |
| A | $200 | 0 | $100 | $200 | $200 |
| B | 0 | $215 | $100 | $195 | $205 |

If all costs accrue in period 1 and the discount rate is 10 percent, then clearly plan A is superior to plan B. However, if the correct discount rate is 5 percent, not 10 percent, then plan B is preferable. The appropriate discount rate is obviously very important in benefit/cost analysis. Such decisions can be biased, however, if Congress or the government agency designates an unrealistically low interest rate, which has frequently been the case in federal expenditure programs. Such an action tends to underestimate the costs of initial capital outlays and overestimate the extent of future benefits.

## Uses and Limitations of Benefit-Cost Analysis

Reliable measures of costs and benefits are not easily achieved. Reasonably precise quantification of benefits and costs is not always possible. Should the loss of a forest area be measured by the value of the timber eliminated? What of the beauty destroyed? What of the area's value as a wildlife habitat? In view of such questions, it is unlikely that agency decision makers will be faced with simple choices.

It should be noted, however, that the difficulties involved in estimating the benefits or the costs of regulatory actions need not necessarily serve as a deterrent to pursuing the analysis. Merely identifying some of the important and often overlooked impacts may be useful to the total decision-making process. Examples on the cost side include the beneficial drugs that are not available because of regulatory obstacles, the freight not carried because empty trucks are not permitted to carry backhauls, and the television stations that are not broadcasting because they could not be licensed. On the benefit side, examples range from the more productive work force that results from a lower rate of accidents on the job to savings in medical care as a result of the safer products and healthier environment achieved from compliance with the regulatory efforts.

At times the imperfections of benefit-cost analysis may seem substantial. Nevertheless, this type of analysis can add some objectivity to the government's decision making process. While benefit-cost analysis is capable only of representing efficiency considerations, the subsequent decisions of elected officials and their appointees might be envisioned as representing society's evaluations of the equity effects of regulatory actions. Economists can provide these decision makers with information via benefit-cost analysis and studies of the distribution of the benefits and costs of regulations, leaving the final decision to society's representatives. Presumably, these individuals are better able to make political decisions with such information on the impacts of the actions they contemplate. Despite its shortcomings, benefit-cost analysis is a neutral concept, giving equal weight to a dollar of benefits as to a dollar of costs.

Not all of the criticism of the notion of benefit/cost analysis may necessarily be valid. It is strange that the very idea of attempting to quantify the effects of regulation outrages some people. They forget the objectives that economists have in developing such measurements. Surely, the goal is not to eliminate all regulation. As economists of all political persuasions have testified before a variety of congressional committees, it is not a question of being for or against government regulation of business. A substantial degree of intervention in private activities is to be expected in a complex, modern society.

Those critics who are offended by the notion of subjecting regulation to a benefit/cost test may unwittingly be exposing the weakness of their position: they must be convinced that some of their pet rules would flunk the test. After all, showing that a regulatory activity generates an excess of benefits is a strong justification for continuing it.

Despite talk of "green eyeshade" approaches, economists are deeply concerned about people, far more than about dollar signs. But it is the painful knowledge that resources available to safeguard human lives are so limited that causes economists to become concerned when they see wasteful or inefficient use of those resources imposed by regulation.

General Motors, for example, calculates that society spends $700 million a year to reduce carbon monoxide auto emissions to 15 grams per mile, thus prolonging 30,000 lives an average of one year, at a cost of $23,000 each. To meet the 1981 standard of 3.4 grams per mile, the company estimates that it will cost $100 million more and prolong 20 lives by one year at an estimated cost of $25 million each. Human lives are truly precious, which is why it is so sad to note the alternative use of that money.

For example, it has been estimated that the installation of special cardiac-care units in ambulances could prevent 24,000 premature deaths a year, at an average cost of approximately $200 for each year of life.

Part of the problem in setting regulatory policy is that the benefits at times are more visible than the costs -- not necessarily greater, but more evident. If the required scrubber for electric utilities is resulting in cleaner air, we literally see the benefits. But the costs are merely part of the higher electric bill we pay. Thus, the cost of regulation takes on the characteristics of a hidden sales tax that is ultimately paid by the consumer. The concern about the costs of regulation does not arise so much from the fact that they are imposed initially on business, but rather from the knowledge that the costs ultimately are borne by the consumer.

A useful byproduct of benefit-cost analyses is the identification of less costly ways of achieving society's regulatory objectives. For example, detailed estimates of industrial compliance with federal regulation, produced by Arthur Andersen & Company for the Business Roundtable, revealed the types of regulation that tend to generate especially high costs (see Table 4). Such information may help government policymakers to select less costly approaches.

In the final analysis, however, the political factors in regulatory decision making cannot be ignored. Many social regulations involve a transfer of economic resources from a large number of people to a small group of beneficiaries. OSHA's coke oven standard, for example, protects fewer than 30,000 workers but is paid for by everyone who buys a product containing steel. So long as regulators avoid concentrating the costs on a small group that could organize political counterpressures, excessively costly regulations can be easily promulgated.

Table 4

ATTRIBUTES OF REGULATIONS WITH HIGH INCREMENTAL COST

| Type of Regulation | Characteristics |
|---|---|
| Continuous Monitoring | Requires evidence of compliance by means of round-the-clock monitoring devices or continuous maintenance of comprehensive records of actions taken and results achieved. |
| Forcing New Technology | Requirements to meet a level of compliance not achievable with available technology, often effected through legislation specifying a stringent deadline. |
| Capital Intensity | Requires the purchase of new equipment or modification of existing equipment. |
| Recurring Costs | Requires actions which lead to continuing costs of operation or maintenance. |
| Retrofitting | Requires modification of existing facilities, not just application to new facilities. |
| Specified Compliance Action | Requires a specified method of compliance without flexibility to recognize differing circumstances for application of alternate techniques to achieve the desired objective. |
| Inadequate Risk Assessment | Requires compliance with a stringent standard even though the risks have not been adequately assessed. |
| Changing Requirements | Requires adaptation to rules which are frequently changed or are subject to delay in being defined; capital spending plans are made without knowledge of requirements to be met. |

SOURCE: Arthur Anderson & Company.

Despite the limitations, there does surely seem to be a useful role for formal economic analyses of regulatory impacts in providing at least an ancillary guide to policymakers. As a federal court stated in striking down the proposed benzene regulation of the Occupational Safety and Health Administration, "Although the agency does not have to conduct an elaborate cost/benefit analysis, . . . it does have to determine whether the benefits expected from the standards bear a reasonable relationship to the costs imposed by the standard." That court's common sense approach seems to set the high ground to which the public policy debates on regulation could profitably shift.

Mr. Gore. Thank you, Dr. Weidenbaum. I expected that we might have some sharp disagreements in this morning's session. I was so engrossed in your statement that I allowed you to run overtime, and we will just have to play it by ear with the other witnesses, but we would like you to hold it within 10 minutes if you possibly can. On that note I think we ought to now call on Mark Green.

## TESTIMONY OF MARK GREEN

Mr. Green. Thank you, Mr. Chairman.

I will reserve responsive comments for the response period. I will summarize a brief introduction to our lengthy report which approaches the cost-benefit issue in the larger context of regulation generally. Especially as the Senate begins hearings on regulatory reform proposals, and as the Supreme Court deliberates how much benzine can be ingested by workers, the subject of cost-benefit analysis is as popular as jogging, and appropriately so. It is an important concept, and one about which I think there are many misconceptions.

When the Russian biologist Lysenko created the myth in 1940 that acquired traits could be inherited, the Soviet regime understandably adopted this theory as State doctrine, since it reinforced their government policy about the new Soviet man. So, too, does the myth of "excessive cost of government regulation" serve the needs of corporate doctrine, though it is as about as reliable and scientifically grounded as Lysenko's theory of genetics.

There are several problems with the catechism that there is overregulation. It rarely pauses to distinguish between unnecessary and wasteful cartel regulation, about which I think all the panel would concur—for example, the prohibition of backhauls by the Interstate Commerce Commission—and lifesaving health and safety regulations. For example, there is a net benefit of 100,000 Americans who are alive today who would be dead but for Federal highway safety, enforcement of highway and auto safety enforcement since 1966.

Also the catechism, assuming national amnesia, never acknowledges why there is regulation in the first place. I have read some people say there is regulation in the first place because there is a new class of "Naderites," who somehow pull the wool over Members of Congress eyes. I think, however flattering that might be, there is a more fundamental reason. Humane capitalism should not and did not tolerate the conditions of the book "The Jungle," thalidomide, 30,000 product-related deaths annually as found in the late 1960's, 50,000 car fatalities a year, or 100,000 annual deaths from occupational disease alone, not even including occupational safety.

It also seems based on theology before analysis. One need not be a psychologist to realize that traditional and almost reflexive business ideology of economic Darwinism, "keep government out of business," combined with the powerful self-interest to exaggerate the burdens of regulation, lead predictably to what I have called the Chicken Little School of Regulatory Analysis.

Examples of this impulse go back at least to Richard Whitney's prediction—he was head of the New York Stock Exchange at the time in the 1930's—that the Federal securities laws of course would destroy the securities market in this country. More recently there was the claim that to prohibit flurocarbons in aerosol spray cans would end that industry. History has not vindicted either claim.

Our report has a series of other examples of exaggerated costs of regulation by businesses who have never liked regulation. To accept their claims at face value about the costs of regulation is about as credible as asking a D.A. if he thinks a defendant is guilty.

Finally, in concept and language, the corporate catechism seems to assume there are only costs of regulation, not benefits. Here the business rhetoric of the 1970's is roughly as sophisticated as its rhetoric of the 1950's when, if you recall, the problem was not "the costs of regulation" but "creeping socialism."

Today business ads against regulation never indicate benefits, of course. My unfavorite is an ad by Gould, Inc., which had a ghoulish cartoon of the Statue of Liberty being hung by a noose because of overregulation. Gould predictably did not mention in its ad it had previously been subject to the largest fine in American history by a court on the endangerment of wildlife. Economists, some at this table, do make ritual statements that not all regulation is bad, before digging in and spending 99 percent of their career attacking regulation. It reminds me of Members of Congress who on the floor talk about their esteemed colleague before they start swinging.

The conceptual and empirical weaknesses of the business from regulation I think have kept it from making inroads into public opinion. An analysis of polled data in Public Opinion magazine, a publication of the American Enterprise Institute, by Seymour Martin Lipset, indicates he could find no substantial movement in the country against specific health-safety regulations. Certainly if you ask the public—What do you think of big government and overregulation—the result is not surprising. But when you ask the public the question—Do you believe in the Federal Traffic Safety Administration insisting on performance standards that cars are safer since 1965, the Food and Drug Administration requiring preclinical testing—there is overwhelming public support for health-safety regulations.

Despite its substantive failings and public unpopularity, however, the catechism against all regulation is making headway in Wasington. Ideas are being seriously considered that are constitutionally and/or administratively defective as the legislative veto, sunset, formal cost-benefit analysis, Presidential intervention and the recent Bumpers amendment.

Soon, if critics of regulation have their political way, we may have a regulator issuing a decision and then there is a legislative veto before it is implemented, a Presidential veto on the regulation before it is implemented, a judicial veto through the Bumpers amendment before it is implemented, not to mention a regulatory analysis, a paperwork analysis, and a sunset analysis. This is not regulatory reform. It is a parody of "Saturday Night Live."

The report we did is based on the assumption that slogans about regulation eventually collide with reality, and that antiregulation slogans are wearing thin in a year that has witnessed Three Mile Island, Love Canal, DC-10, PCB's spreading throughout the Midwest, and the scaffold collapse at Willow Island.

Our report attempts to demonstrate in detail that a cartel regulation and health-safety regulations are as different as airplanes and airbags, that the costs of regulation are biased upwards by business advocates and their retained economists. Cost-benefit analysis is a primitive tool that has been oversold, and that inherently discriminates, given the current state of the art, against beneficial regulation.

Finally, the best estimates of the benefits of five major Federal health-safety programs—let me use the acrynoms—OSHA, FDA, NHTSA, EPA, and CPSC—indicate that the lifesaving economic benefits are over $37 billion in 1978, will be over $80 billion for these five alone by 1985, with the potential annual benefit, which is another way of saying all the costs of not regulating, being over $200 billion.

We are attempting to reconceptualize the debate over regulation by providing new data. This debate is now conceptualized as one over big Government, when the real issue is corporate crime and public health, for if the willful pollution of a town's river and air, a community good which is not easily replicated, if the marketing of dangerous tires or car, if hazardous worksites can lead to death or injury is not criminal, then the word has really lost its meaning. Hence the title of our report, "Business War on the Law." The regulations attempting to protect consumers and workers are not merely derogatively redtape, but law.

Also, as participants in this debate talk less about abstractions, and more about the victims of market abuse, the perception of what is at stake in the issue of cost-benefit analysis becomes much more compelling.

Let me cite Neil Goldschmidt, the incoming Secretary of Transportation, who told a television interviewer that he would not cut casually back on auto safety regulation because—

> It is very hard to tell someone who has turned into a paraplegic or epileptic because of an auto accident that there isn't any reason for the Government to pay attention to safety standards.

New data are essential since existing data developed by drug firms and not drug consumers, by trade associations and not labor unions, by industry economists and not previously consumer activists, have proven so onesided and distorted.

As our analysis indicates, for example, Murray Weidenbaum's estimate that all Federal regulations costs over $100 billion is a consumer fraud—ideologically arithmetic that arrives at predetermined conclusions, and should be entered with the claim—recall this one—that the chances of getting injured in a nuclear accident are about the same as being hit by a meteor.

To conclude, Mr. Chairman, a compilation of benefits data was obviously not without risk. Many of the existing studies were crude. The field is in its infancy. Also some friends and colleagues warned us against quantifying benefits at all, because it would require evaluation of life, and because benefit studies invariably understate, due to their inability, the economist's inability to measure esthetic gains, psychological suffering, what is the dollar value of the loss of consortium by a spouse killed or injured in an auto accident, for example, or of equitable and distributional gains, not to mention long gestating diseases, where the numbers come in in 30 years, if at all. But the authors of the report of Ralph Nader who support the research group thought it important, especially as Congress begins to deliver regulatory reform, to utilize and encourage an analysis of benefits.

So while this report is to our knowledge the first attempt to synthesize the benefits of health safety regulation, it surely won't be and should not be the last. We welcome subsequent scholars and officials to critique our effort and then to build on it and go beyond it, and I look forward to Jim Miller's efforts to critique our reports so quickly after it was printed.

Thank you, Mr. Chairman.

Mr. GORE. Thank you very much, Mr. Green.

Dr. Miller.

## TESTIMONY OF JAMES C. MILLER III

Dr. MILLER. Thank you, Mr. Chairman. I appreciate this opportunity to present my views. I should note that these are personal views and do not necessarily represent those of the American Enterprise Institute, with whom I am associated. As you probably know, the American Enterprise Institute is an educational organization that does not itself take positions on public policy issues.

The letter that you or the chairman of the subcommittee sent to me asked me to "prepare a critique of the new study" that Mr. Green and Mr. Waitzman prepared, and I have attempted to respond to the committee's request, and the testimony or the thing that I left with you is in two parts. One is a prepared statement; and second, there is a lengthy technical attachment to it that goes sort of line by line and page by page, and gives some comments I have on the report.

Mr. **Gore**. We are going to include both of those documents in full in the record. [See p. 360.]

Dr. **Miller**. Thank you, sir.

What I would like to do today is to summarize very briefly the major points, some major points in my statement, and a few other things, and hopefully in the time allowed.

The first thing I would like to say, though, Mr. Chairman, is that I would hope in all of this that we could somehow reduce the level of vituperation that tends to surround this discussion over benefit-cost analysis. I think the thing we ought to do is try to focus on the nature of the analysis, the quality of the analysis, and the usefulness of the analysis, and the last thing we should do is to question the motives of the individuals who participate in it.

Now Mr. Green read some things in his statement just a moment ago which I think are rather cavalier attacks on the motives of people who are involved in this. Let me tell you one reason that I especially am concerned about these kinds of things, especially when I get into areas of reducing worker exposure to carcinogens or other areas that pose imminent dangers from carcinogens. You see, my maternal grandfather died of cancer. My paternal grandfather died of cancer, and so did my paternal grandmother. And my mother has had a cancer operation. And so this sort of thing is a very serious matter to me, and when I do analyses, I do it because if anything I want to make the world better, and I want to use resources in such a way that maximize the reduction in exposure, and the saving of lives, if that is a way of saying it.

Let me go on, if I can, to talk briefly about the Green-Waitzman study. First, I think the two major contributions of the study are, first, that it does draw attention to the aggregate benefits of regulation—no question about it, and I would be astounded if Professor Weidenbaum disagrees with me—that is, that the benefits of regulation are equally interesting and important as the cost of regulation. So we do need to have research on the benefits of regulation as well as the cost, and most of the work of most benefit-cost analyses that I know anything about does this, and so to my knowledge it comports with Mr. Green's, and that is this does represent the first bringing together of the aggregate costs of regulation—excuse me, the aggregate benefits of regulation.

One message that comes from this to me is that there is a paucity of good estimates of the benefits of regulation, and more research needs to be done in this area, and I think, Mr. Chairman, you could probably have the greatest impact on this if your committee and others would urge agencies to do analyses of the benefits, good analyses of the benefits of regulation, and to make available to scholars good data from which such analyses can be made.

The second major contribution of their study, it seems to me, is pointing out the importance of the redirectional consequences of regulation, and that is, Mr. Chairman, I suspect just like the Congress, very formal analyses about the efficiency aspect of things are not so important to you as whose ox gets gored, and in regulatory changes and policies those are important issues as well, and they definitely should be considered in benefit-cost analyses.

On the other hand, the authors have, it seems to me, a number of shortcomings in their report, and I cannot recite the litany here, because for one thing it would take too long. The other is, it is available, especially in the lengthy attachment to my statement.

I would just mention several examples. First, the authors are considerably less critical of studies that come up with evidence that tends to support their views than they are of studies that come up with evidence that is critical of their views.

Second, as Professor Weidenbaum noted, they are very critical of Professor Weidenbaum where they feel that he has overestimated, or some study on which he has based an estimate of cost, where they feel he has overestimated the cost, but they neglect to point out instances where the studies may well have underestimated the cost, or where in his compilation not having a cost estimate he carried that cost to zero.

Third, they make some analytical errors. For example, they neglect to point out that some of the benefits of regulation do show up as increases in productivity or decrease in prices, regulations that require cleaner and healthier and safer working conditions, increased productivity. They neglect to point that out.

They also erroneously count as a benefit of regulation the resources used in pollution control. That is not a benefit. That is the cost of this kind of regulation, so that would be double counting. It is an error, by the way, made by the Federal, by the executive branch of the Government as well.

They also point out that benefit-cost, or they allege that benefit-cost analyses invariably underestimate the benefits and overestimate the cost. Benefit-cost analysis, as Professor Weidenbaum said, is absolutely neutral. A bad analysis, or a bad benefit-cost analysis, might overestimate the costs and underestimate the benefits, but the technique is neutral.

Also, Mr. Chairman, the authors have the ability to define benefit-cost analysis very, very narrowly, and then on that basis to criticize benefit-cost analysis.

Well, most people who are involved in this area that I know take a much more expansive view of the definition. Benefits include every positive aspect. Costs include every negative aspect.

At base benefit-cost analysis is just say that agencies should make rational decisions, and should think through the ramifications of their actions. Mr. Green and I were on a panel last week, and I just sort of made up, just before I got up and talked, in a sense to ask the agency do you know what you are doing, not in a pejorative way, but just do you know what you are doing, do you know what the ramifications of your action really are? And that seems to me to be a legitimate question to ask any Government agency.

One could imagine that agency will be available to list some benefits that are capable of quantification, and capable of translating into money, and other benefits that cannot be. They can indicate some costs that are capable of quantification, and translation into money, and others that cannot be.

The important thing it seems to me is that those benefits and costs be identified, and that then the agencies focus on those sources of benefits and costs that are difficult to quantify in money terms, and that is what it seems to me cost-benefit analysis in its better form is all about.

Finally let me end by quoting my concluding remark from my prepared statement. As described by Messrs. Green and Waitzman regulation is usually justified on grounds of market imperfections, but regulation also has many imperfections, as many scholars have observed.

Moreover, any alternative approach to regulation, be it tax incentives, performance standards, or whatever, will also have imperfections. The world is not perfect, and perhaps never will be. The relevant question is whether we can improve institutional performance through changes in policy. I earnestly believe that in the regulatory area, substantial improvements could be made by the greater use of benefit-cost analysis, and I urge this subcommittee to give it every consideration.

Thank you, sir.

[Testimony resumes on p. 426.]

[Dr. Miller's prepared statement and attachment follow:]

# PREPARED STATEMENT OF
# JAMES C. MILLER III
# CO-DIRECTOR AND RESIDENT SCHOLAR
# AMERICAN ENTERPRISE INSTITUTE FOR PUBLIC POLICY RESEARCH
# before
# THE SUBCOMMITTEE ON CONSUMER PROTECTION AND FINANCE
# and
# THE SUBCOMMITTEE ON OVERSIGHT AND INVESTIGATIONS
# U.S. HOUSE OF REPRESENTATIVES

(October 24, 1979)

## I. INTRODUCTION

Messrs. Chairmen, Members of the Subcommittees: Thank you for this opportunity to present my views on the use of benefit-cost analysis in regulatory decisionmaking. I should stress that these views are my own and do not necessarily reflect those of the staff, advisory panels, officers, or trustees of the American Enterprise Institute (AEI), with which I am associated. As you know, AEI is a research and educational institution which does not itself take positions on public policy issues.

Messrs. Chairmen, in your letter of October 2nd, you asked me to prepare a critique of the recent report issued by Mr. Ralph Nader's Corporate Accountability Research Group and authored by Messrs. Mark Green and Norman Waitzman.[1/] I have

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[1/] Mark Green and Norman Waitzman, Business War on the Law: An Analysis of the Benefits of Federal Health/Safety Enforcement, (Washington: The Corporate Accountability Research Group, 1979).

attempted to comply with this request and have assumed that by use of the term "critique" you wished to obtain an objective appraisal of the report rather than simple "criticism". Thus, I have attempted to reflect favorably on the authors' work where warranted, as well as to point out important shortcomings.

My formal response to the Subcommittees is in two forms: first, there is the instant prepared statement which summarizes my impression of the overall objectivity and quality of the analysis and comments on some of the major issues raised in the report; and second, there is an attachment to this prepared statement which consists of a series of technical comments on the report.[1/]

## II. OVERALL OBJECTIVITY AND QUALITY OF THE ANALYSIS

A major question that came to mind when I began reading the volume is what it purports to be. That is, is it meant to be a formal analysis, or is it meant to be primarily "argument"? The subtitle ("An Analysis of the Benefits of Federal Health/Safety Enforcement") suggests that it is meant to represent a formal objective analysis. On the other hand, in his signed introduction (p. iii), Mr. Green describes the report as an "attempt to demonstrate" certain propositions, which sound like "argument".

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[1/] Matters discussed in the prepared statement are not necessarily covered in the attachment, and vice versa.

If we are to assume that the report is meant to represent objective analysis, then judged by conventional standards it falls short of the mark. First, the title ("Business War on the Law") hardly connotes objectivity. In his signed introduction (p. iii), Mr. Green states: "[T]he real issue is corporate crime and public health" [emphasis added].

Consider the innuendo and occasional personal attack on those who analyze regulatory costs and emphasize the need for benefit-cost analysis. According to the authors, Professor Murray Weidenbaum is guilty of contributing to "consumer fraud" by use of "ideological arithmetic" (p. iv). Professor Sam Peltzman's plausible explanation for why automobile safety regulation failed to have as much impact as its supporters believe is characterized as the "'nut behind the wheel' thesis" (p. 98). There is condemnation of "the purpose and tactics of the economic analysis groups" (p. 84). Those whose analysis fails to find favor with Messrs. Green and Waitzman are characterized as "retained economists" (p. iii) and as "ideological economists" (p. 2). There is a suggestion that such economists view human pain, suffering, and death very cavalierly (p. 9); might enjoy seeing more thalidomide episodes (p. 114); and probably would have endorsed Jonathan Swift's "modest proposal" to serve up the starving children of Irish peasants to English aristocrats (p. 39).

Second, consider who the authors thank as "interested scholars and officials who took the time to read all or sections of their report" prior to publication (p. iv). They include one university professor (not an economist) who is an outspoken critic of benefit-cost analysis and a strong supporter of regulation; two officials of the Occupational Safety and Health Administration (OSHA); two officials of the National Highway Traffic Safety Administration (NHTSA); one official of the Environmental Protection Agency (EPA); two officials at the Consumer Product Safety Commission (CPSC); and one person each from the Center for Auto Safety and the Health Research Group. Unless one of the other three people listed is an exception, it would appear that virtually no one presumed to be critical of regulation was asked to comment on the manuscript.[1]

Consider now the authors' analytical treatment of the issues. First, with respect to their discussion of benefits, the authors tend to cite reports coming up with fairly high numbers, and even when the authors of such studies express their conclusions in terms of a range of estimates, Messrs. Green and Waitzman often adopt the top end of the range (see pp. 81 and 88). While being critical in the extreme of economists who rely upon industry data and reports when making estimates of costs, they accept studies produced by government agencies and other groups without expressing any concern over the problem of possible bias. As opposed to what the authors view as extremely questionable research on the part of the economists who have tried to estimate regulatory costs, they refer, for example, to the "documented benefits" of OSHA regulation (p. 89).

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[1] For this reason, in my judgement, the report suffers from many inaccuracies that could have been cleared up had such a review been obtained.

Moreover, while the authors criticize certain study methodologies which result in findings they disagree with, they willingly accept the same approach when the result supports their position. For example, at pages 57-58 the authors are extremely critical of Professor Peltzman for (in their view) not adjusting his analysis for the secular decline in the rate of drug innovation (which the authors claim lead Peltzman to underestimate the benefits of the 1962 drug amendments), and at pages 79-80 they also fault other researchers for not taking into consideration the secular increase in industrial accidents (which the authors allege lead to underestimates of the benefits of OSHA regulation.) Yet, when it comes to analyzing the benefits of automobile safety regulation, the authors accept an estimate which fails to take into consideration the secular decline in accident rates evident before NHTSA came into being (see p. 96).

For these reasons, I have serious reservations concerning the objectivity of the report.

## III. SOME MAJOR ISSUES RAISED IN THE REPORT

### Aggregate Benefits of Regulation

To me, the major contribution of the report is that it raises the issue of the aggregate benefits of regulation. Without question, the benefits of regulation are as important as the costs. The authors have made an important contribution to the current debate by bringing together many of these benefit estimates.

An important lesson of this effort, it seems to me, is that more work needs to be accomplished on the benefits of regulatory activities. It is lamentable to me as a researcher that so often federal agencies have been reluctant to perform this kind of analysis or to provide a data base from which estimates can easily be generated. I hope this will change.

### Benefit-Cost Analysis and its Use

Messrs. Green and Waitzman adopt a very narrow, mechanical definition of benefit-cost analysis and then go on to criticize its applicability. Their definition reads: "If the monetary gains expected from a project are less than the cost of undertaking it, that project fails the cost-benefit test and should be dropped" (p. 21). While there is some justification for adopting such a narrow definition, especially in view of the early literature, it seems inappropriate today. The reason is that most economists who are students of policy making (some of whom have participated in it) adopt a much broader, more expansive definition. Basically, as I view the concept, the benefits of a proposal include every positive aspect, and the costs include every negative aspect. Some of the benefits of a regulatory proposal may easily be quantified in money terms and others not; some of the costs may easily be quantified in money terms, and others not. But the important point is that whether they can be quantified in money terms or not, they at least be identified.

Certainly, at present agencies have an implicit benefit-cost framework. Although on many occasions the full array of benefits and costs and how they are weighed is not described for the public in adequate detail, nevertheless the very fact that decisions are made reveals that some assessment and weighing takes place. So efforts to limit the use of benefit-cost analysis cannot succeed in eliminating assessments of benefits and costs; all they can accomplish is making such assessments less specific.

One of the most important advantages of benefit-cost analysis is that it can free regulators to focus more on the subjective areas of benefits and costs where quantification in money terms is more difficult. Let us imagine the regulators having a simple ledger (for a given regulatory initiative). On the left side are listed first those benefits that can be quantified in money terms and second those than cannot. On the right side are listed first those costs that can be quantified, and then those costs that cannot. By netting out the quantified benefits and costs, the regulator is then able to focus on those pluses and minuses which are not easily capable of quantification. An analogy might illustrate the point. Imagine there are two very large piles of sand, and one is asked which is the larger. If the piles of sand are comparable in size, the decision is very difficult. However, if a "bucket brigade" were organized and (equal) bucketfuls were taken from each pile in sequence, it would become progressively easier to tell which had been the larger. That is, as their absolute sizes diminish (as the quantified benefits and costs are netted out), their relative sizes become more apparent.

The important thing to bear in mind is that agencies have to make decisions. The question is whether benefit-cost analysis can be used to improve the quality of those decisions. Information is never perfect, but this is not to say that less information is preferable to more. As a recent (October 15, 1979) Washington Post editorial noted:

> "For a scientist faced with...uncertainty as to the phenomenon analyzed, the course of action is clear: he does not publish. His experiment is not over until further research reduces the uncertainty to an insignificant level. He goes back to the lab and collects the answer he needs. But the policy-maker, and the scientist he depends on for advice, has no such luxury. They have responsibilities, mandated by law, which force them to act."

Importance of Redistribution

Messrs. Green and Waitzman make the extremely important point that the redistributional consequences of regulatory activities are often a determining factor in regulatory decisions. Without question, the redistributional consequences often drive the final decisions in regulatory matters. This is especially true when one group bears the costs and another reaps the benefits. But a benefit-cost analysis of the type I advocate *would* include the issue of redistribution as one of the benefits (*or costs*) of the proposed regulatory iniative.

Moreover, I would argue, the importance of redistributional consequences *strengthens* the argument for benefit-cost analysis. The reason is that a good benefit-cost analysis will identify (and quantify, to the extent possible) those who would benefit from a regulatory initiative and those who bear the costs. As former member of the Council of Economic Advisers, Otto Eckstein (whom the authors quote, at page 21), has noted:

> [O]ne of the criteria on which a project must be judged, and which benefit-cost analysis disregards altogether, is the redistribution of income which a project brings about. Since our notions of equity about the division of the national income are based on ethical value judgments which are clearly outside the realm of economics, project evaluation cannot include a judgment on this score. *But it ought to provide the means with which the Congress and the public can exercise their own judgment.* Some of the present financial policies obscure the nature of the redistribtuion, and the data which are presented are misleading. *Estimates of the actual division of costs and benefits among the beneficiaries of the various programs and the taxpayers should be part of each project report and can be a ready by-product of the financial analysis* [emphasis added].1/

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1/ Otto Eckstein, *Water-Resource Development: The Economics of Project Evaluation* (Cambridge: Harvard University Press, 1958), pp. 17-18.

## The Connection Between Regulation and Inflation

In their discussion of the relationship between regulation and inflation, the authors provide an excellent conceptualization: "Regulation is inflationary if costs exceed benefits or, alternatively, if it does not achieve its goal in the least costly manner. Regulation is deflationary if benefits exceed costs" (p. 49). Yet, in their discussion of the actual inflationary impact of regulation and its policy relevance, they neglect to point out that a given inflationary or deflationary impact brought about by regulation is much more significant than the same impact brought about by a manipulation of aggregate demand.

As I said in oral testimony last August before the Joint Economic Committee:

> Regulatory reform...is, of course, no cure-all for inflation. Yet it's very important...
>
> [Y]ou wouldn't go wrong in the long run if you characterized inflation as too much money chasing too few goods. This raises immediately two alternative policy approaches to the inflation problem. The first is restraining aggregate demand by retarding the rate of growth of the money supply and by conservative fiscal policies. As you know, that approach often has an adverse effect on aggregate supply.
>
> The other approach is increasing aggregate supply. Removing the artificial inefficiencies imposed by unwise regulation has the effect of increasing aggregate supply...
>
> As Adam Smith said, the objective of production is consumption. What we're most interested in is increasing the supply of goods and services for everybody; therefore, a very small percentage reduction in the rate of inflation brought about by an increase in aggregate supply is many more times desirable than the same decrease in the rate of

> inflation brought about by restraint on the demand side.
>
> Thus, regulatory reform and tax policies meant to increase productivity are so much more important, it seems to me, than policies meant to restrain aggregate demand. [Joint Economic Committee Hearings on Regulatory Budgeting and the Need for Cost-Effectiveness in the Regulatory Process; August 1, 1979; corrected transcript.]

## The Relevance of Gross Comparisons of Benefits and Costs

One useful characterization of the report by Messrs. Green and Waitzman is that it is an attempt to demonstrate that, while the aggregate costs of regulation may be large, they are exceeded by the aggregate benefits. (See, in particular, the summary table presented on page 131a of the report.) In my judgment, this is not a particularly fruitful debate, for it would seem that the question of wholesale acceptance or elimination of regulation is not really the relevant policy issue. What is at issue is how we might achieve more net benefits from regulation. In the aggregate this asks the question whether regulation has gone "far enough" or "too far". That is, it is entirely possible that regulation can be insufficient in overall stringency yet still have benefits exceed costs. Or, in the aggregate, regulation can be too stringent, meaning that past some optimal point resources are being allocated to this activity where they would be of greater value if used elsewhere in the economy.

On the more relevant (it seems to me) disaggregated level, the comparison of benefits and costs raises several questions.

First, are there some regulatory activities where the costs exceed the benefits, and thus should be examined for restructuring or elimination? Second, are some individual regulations too stringent or too loose? And third, in all cases are there opportunities for more cost-effective approaches?

## IV. CONCLUDING REMARK

As described by Messrs. Green and Waitzman, regulation is usually justified on grounds of "market imperfections."[1/] But regulation also has many imperfections, as many scholars have observed.[2/] Moreover, any alternative approach to regulation -- be it tax incentives, performance standards, or whatever -- will also have imperfections. The point is that all institutional arrangements have imperfections. The world is not perfect and perhaps never will be. The relevant question is whether we can improve institutional performance through changes in policy. I earnestly believe that in the regulatory area substantial improvements could be made by the greater use of benefit-cost analysis. I urge the Subcommittees to give it every consideration.

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Messrs. Chairmen, Members of the Subcommittees: That completes my prepared statement. I shall be happy to address any questions you might have.

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[1/] In my view, not yet formally developed, most of the literature discussing the justification for intervention in the health and safety areas is wide of the mark. For it appears to me that the real justification is that improved health and safety is an ordinary "public good". Even if all of the benefits discussed by Messrs. Green and Waitzman were internalized, the provision of certain safety and health activities would still be insufficient. The reason is that, in a way of saying, people generally sleep better at night knowing that, say, the risk to miners is less than what they would have chosen, even in the face of perfect information; that certain consumers will not run as high a risk from dangerous products as they would even if they also possessed perfect information, et cetera.

[2/] I once heard Cal Tech economics professor Roger Noll report that someone had observed that economists spent the first forty years of this century identifying imperfections in the marketplace which would justify regulation, and have spent the remaining forty identifying imperfections in regulation.

ATTACHMENT
James C. Miller III
October 18, 1979

## TECHNICAL COMMENTS[*]

on

Mark Green and Norman Waitzman, *Business War on the Law: An Analysis of the Benefits of Federal Health/Safety Enforcement* (Washington: The Corporate Accountability Research Group, 1979)

Page 1 - The authors state that federal economic regulation is justified "when the marketplace fails to conform to a workable competive model -- due, for example, to natural monopoly, scarce resources, or predatory pricing." Natural monopoly, of course, is widely accepted as a justification for economic regulation. [Some controversy, however, does exist on this point among economists; see, for example, Harold Demsetz, "Why Regulate Utilities?," *Journal of Law and Economics* (April 1968), pp. 55-65.] But it should be noted that *all* resources are scarce, and that there is very little evidence of predatory pricing in the economy (except for instances where regulation may be relied upon to make it "worthwhile" for a company to engage in such predation).

Page 1 - Overall, the discussion of the distinction between *economic* regulation and *social* (i.e., health, safety, and environmental) regulation is well done, and, as the authors point out, it is important to bear this difference in mind when analyzing regulatory phenomena.

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[*] I wish to acknowledge the extraordinary assistance rendered by Jeff Eisenach and Linda Trimyer in the preparation of this attachment.

Page 2 - The authors contend that the distinction between economic and social regulation has typically eluded many economists. While this may be true, the authors seem to imply that many of the economists they criticize in the report are guilty of failing to make this distinction. To the degree such an indictment was intended, it is unfair. For example, one of the economists singled out for particularly harsh criticism is Professor Murray Weidenbaum, Director of the Center for the Study of American Business at Washington University in St. Louis and this year, on leave as a Resident Scholar at the American Enterprise Institute. Clearly, he does make the distinction the authors describe. For example, his major text [*Business, Government and the Public* (Englewood Cliffs: Prentice-Hall, Inc., 1977)] states:

> Although the traditional type of federal regulation of business surely continues, the regulatory efforts established by the Congress in recent years...follow in the main, a fundamentally different pattern.... The new federal regulatory agencies are broader in the scope of their jurisdiction... (p. 13).

Weidenbaum then goes on to illustrate the major difference between the two types of regulation with a diagram (Figure 2-1, p. 14). Furthermore, the AEI print of Professor Weidenbaum and Robert DeFina's compilation of estimates of the costs of regulation (Murray L. Weidenbaum and Robert DeFina, "The Cost of Federal Regulation of Economic Activity," Reprint No. 88, American Enterprise Institute, May 1978), refers to "[r]egulatory activities, both the older type and the newer cross-industry agencies..." (p. 1). Weidenbaum and DeFina also note that:

> "From 1887 to the present, the character of government regulation of business in the United States has undergone significant change. The industry-specific nature of much of our earlier regulation (for example, the Interstate Commerce Commission established in 1887) has been augmented by a new functional type of regulation in areas ranging from product hazards to job discrimination (p. 1).

Like many other economists, I also make the distinction between economic and social regulation in most of my writings and public speaking. Examples:

> The rising tide of regulation primarily reflects a growth in "social" regulation rather than the old-style "economic" regulation... The old-style economic regulation typically focuses on markets, rates, and the obligation to serve.... [T]he new-style social regulation affects the conditions under which goods and services are produced and the physical characteristics of products that are manufactured.

> [William Lilley III and James C. Miller III, "The New 'Social Regulation'," The Public Interest (Spring, 1977), pp. 52 and 53; AEI Reprint No. 66, May 1977).]
>
> In the remainder of these remarks ...I will distinguish between the conventional "economic" regulation and what many have termed "social" regulation -- that is, regulation affecting health, safety, and the environment. [James C. Miller III, "Regulatory Reform: Some Problems and Approaches" (presentation before the American Management Association's First National Forum on Business, Government, and the Public Interest August 1977), p. 2.]
>
> As is well known, federal regulation of economic activity is a pervasive phenomenon. Although there are many variations, a given regulatory activity can usually be classified as either "economic" or "social". The former refers to control of rates, services, and ancillary matters. The latter deals with health, safety, and the environment. [James C. Miller III, "Economic Regulation of Trucking," in Report of the Economic Advisory Panel to the National Commission for the Review of Antitrust Laws and Procedures (November 9, 1978); reprinted as "The Pros and Cons of Trucking Regulation," AEI Reprint No. 95 (March 1979), p. 1.]

Page 3 - The authors discuss in more detail the economic justification for regulating natural monopolies. Arguably, the reasons for regulating monopoly have as much to do with equity as efficiency. Moreover, it is important to bear in mind that regulation itself is not costless and often creates substantial "imperfections" of its own. Thus, the relevant policy question (in this case and analogously for others) is whether a regulated monopoly is is better than a private monopoly (a point, in fairness, the authors would appear to recognize).

Pages 3-7 - The authors present a good discussion of a major line of inquiry concerning the "demand" for regulation. [On this, see George J. Stigler, "The Theory of Economic Regulation," Bell Journal of Economics and Management Science (Spring, 1971), pp. 3-21.] I might note, however, that many of the economists lauded in line 4 of page 7 as having accurately predicted the results of airline deregulation have also prepared analyses which some would view as critical of certain aspects of social regulation.

Page 8 - The authors seem to imply that health, safety, and environment are important goals in and of themselves, and that in addition they are important because they allow a "full appreciation and enjoyment of all 'economic goods'." This would appear to be (conceptual) double-counting.

Page 9 - The authors attribute an increase in the cost of health care (and its proportion of the Gross National Product) in part to "a deteriorating environment". Yet, the Ninth Annual Report of the Council on Environmental Quality (which the authors later cite) states at page 1:

> "Most urban areas have yet to achieve the existing standards for all five "criteria" pollutants [footnote deleted].... The overall trend in most areas is toward continued improvement.... Of the five criteria pollutants, only nitrogen dioxide showed no trend of *improvement* since the national ambient standards were set.

And, at page 90, the Council's report notes with respect to water quality that,

> Overall, national efforts of the past decade to improve water quality are beginning to show results. There is evidence of improvement in many specific places and in the trends data for a few pollutants and few years so far [footnote deleted].

Even if the environment were experiencing a significant deterioration, there is little evidence of that fact's explaining any significant portion of the rise in expenditures on health care. As one of my colleagues, Dr. Robert Helms, notes, careful studies of the causes of increased medical expenditures have found that between the years 1969 and 1978, annual percentage changes in personal health care expenditures have averaged over 12 percent. When broken down into the factors that explain this increase, rising prices have accounted for approximately 63 percent, population growth for 7 percent, and increases in "intensity" (representing changes in both use and kinds of services and supplies) for about 30 percent. [See, for example, Robert N. Gibson, "National Health Expenditures, 1978", *Health Care Financing Review*, (Summer 1979), p. 22, Table 2.] Conceptually, any major change in the composition of environmentally-caused diseases would have to be included in this "intensity" figure. While no breakdown of this figure is presented, it would have to be pointed out that some part of this 30 percent should be attributed to the increased uses of medical technology that occurred in the last decade as well as the effects of the increased use of medical care as a result of the growing proportion of people who are covered by medical insurance.

Page 9 - The authors also repeat the common allegation that "80 to 90 percent of the 400,000 annual cancer cases are complicated by an environmental factor...." Yet, by the term "environmental factor" scientists refer to *all* environmental aspects, not just to what we normally think of as environmental hazards. Recently Dr. John Higginson, Director of the World Health Organization's International Agency for Research on Cancer and one of the first and most important scientists to point to "environmental" causes of cancer, was quoted in Science magazine as follows:

> Dr. Higginson: My contribution...was limited merely to giving a more concrete estimate of the impact of environmental factors, and to show that most cancers were not due to genetic factors...
>
> But when I used the term environment in those days, I was considering the total environment, cultural as well as chemical...Environment is what surrounds people and impinges on them. The air you breathe, the culture you live in, the agricultural habits, the social pressures, the physical chemicals with which you come in contact, the diet, and so on....
>
> Reporter: So, in effect, your conclusions have been misinterpreted all along?
>
> Dr. Higginson: They have been misinterpreted, funnily enough, not among the majority of the scientists with whom I have contact, but by the chemical carcinogen people and especially by the occupational people. [See "Cancer and Environment: Higginson Speaks Out," Science (September 28, 1979), pp. 1363.]

Page 9 - The authors fail to note that insurance premiums, by and large, are redistributed, and therefore constitute a benefit to offset costs. To count insurance premiums and also the cost of medical care would be double-counting the cost of disease.

Page 10 - The authors note that unsafe and unhealthy working conditions can lead to a deterioration in labor input and give several examples. As in most of their other discussion of this point, the authors fail to recognize that firms have economic incentives to improve the quality of working conditions precisely because that can lead to an improvement in productivity. The point also applies to their discussion of capital.

Page 11 - Here and at other places in the report, the authors cite data showing that it would have been much cheaper to have prevented an industrial (pollution) accident that to clean it up later. But a program of prevention represents the bearing of costs for not only those accidents that happen but those situations where (mercifully) accidents do not happen. The relevant question (giving due consideration to aesthetic issues) is whether the cost of prevention overall is less than or exceeds the cost of cleaning up those accidents which happen.

Pages 11-12 - The authors contend that, "[e]conomic efficiency requires informed choice." They go on to say that because information -- especially concerning the adverse health effects of industrial exposure -- is not known, this is a rationale for regulation. Perhaps so, but as long as the problem is a lack of dissemination of information, then an alternative to specific regulation is simply to disseminate that information. Unfortunately, in many cases the problem is that no one knows the true effects. In my judgment, this lack of knowledge is not itself a justification for regulation (though it is perhaps a justification for government support of research). In short, the existence of imperfect information is not, by itself, a justification for specific regulation.

Page 13 - The authors note that the usual response of an economist to a situation of imperfect information is to provide (collectively) more information. But they seem to dispute this as a policy solution because evidence shows that many people are unable to conceptualize risks accurately. It is important here to note, however, that in most cases markets are "made" by the more informed consumers. That is (I first heard William Niskanen use the term), markets are made by the "switchers". Those consumers who are willing to investigate alternatives and to respond by choosing less risky (at a given price) products in effect "police" the safety of the market in general. The same thing is true of employment: not every employee has to know the risks associated with a job or to be highly mobile. The important thing is that enough workers have sufficient knowledge and be mobile to "police" the wage/safety/health options offered by employers.

Page 13 - The authors point out that in many areas the range of human choice is quite narrow. Rather than being a justification for regulation, this is frequently a cost associated with it. The reason is there is a tendency on the part of regulators to prescribe uniform standards which do not take into account differences in individual preferences. For example, prior to the current wave of automobile regulation, consumers could indicate preferences for or against airbags, for or against bumpers that survive 5 mile per hour impacts, and for or against automobiles that get 30 miles to the gallon. But under regulation, consumers are not allowed the option of purchasing automobiles that do not meet the federally-mandated standards.

Page 14 - The authors' argument that consumers are helpless responders to "induced demand" is just not credible to most of the economic community. Certainly many resources are devoted to advertising and to product development. But whether these constitute a response to the consumer or an effort to sell him a bill of goods is an empirical matter. Most economists now find the former hypothesis more credible.

Page 17 - The discussion of the political rationale for health and safety regulation given by the authors appears incomplete.

Page 17 - They first posit a "class conflict" model they say is associated with Irving Kristol and Paul Weaver and then respond to it by arguing that excesses of enterprise were what created a spontaneous demand for a regulation -- not the "new class". Actually, as one would expect with phenomena as complicated as these, there would appear to be several forces at work. Consequently, several theories would have some application and need to be explored. Examples include the "iron triangle" and "capture" theories.

Page 21 - This page, constituting the beginning of the chapter on "The Trouble with Cost-Benefit Analysis," leads off with a quote from Professor Otto Eckstein, a former member of the Council of Economic Advisers. However, two questions may be raised about the authors' use of this quotation. First, it is from a book 21 years old and hence is not necessarily reflective of the present state of the art, certainly economic science has progressed since 1958. Second, Eckstein's statement came within the context of his criticism of certain provisions of the Flood Control Act of 1936 requiring the measurement of all benefits and costs, "to whomsoever they may accrue".

Page 22 - The authors criticize Professor Murray Weidenbaum for recommending legislation limiting new regulations to those instances where total benefits to society exceed total costs. As discussed in the prepared statement, neither I nor Professor Weidenbaum adopt the authors' narrow definition of benefit-cost analysis.

Page 22 - In a section making the point that benefit-cost analysis is difficult in cases where information is not perfect, the authors reproduce a first-year examination question by Professor Mahlon Straszheim of the University of Maryland. They then point to this as being an extremely simplistic view of the real world and imply that since the real world is not as simple as this examination question implies, benefit-cost analysis is not particularly useful.

The authors, perhaps unwittingly, have erected a straw man. A call to Professor Straszheim revealed information that I, as a former college professor, had every reason to expect. First, the purpose of the question was to test the students' ability to make marginal evaluations. It was not designed to test the students' knowledge of how to go about quantifying benefits. In fact, as the question clearly indicates, the benefits and costs are given to the student.

Two other points are relevant here: First, this is the

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kind of question I would purposely ask of students, expecting the brightest to indicate in addition to the answer expected some of the problems in quantifying benefits and costs. Second, as Professor Straszheim noted to me, this is the kind of question you ask of a college freshman, but as students advance you ask questions that are more "realistic" and further test the students' skills. Perhaps the lesson of this example is that for policymaking purposes we would not want to rely upon college freshman to perform benefit-cost analyses.

Page 24 - The authors stress that "C-B analysis assumes that prices are competitive, and are therefore accurate indices of consumer satisfaction." This is not necessarily so. Where market imperfections exist, other measures of satisfaction can be incorporated in the benefit-analyses.

Page 24 - Here, and elsewhere, the authors lament the propensity of industrial firms to destroy data. The clear implication is that firms destroy data in order to prevent "legitimate" uses of it. But firms quite legitimately have concerns over the use of data because of the possibility of industrial and trade secrets finding their way into the hands of competitors. For this reason, usually there is an understanding that such information will be destroyed after the initial purposes have been served.

Page 25 - The authors discuss an episode earlier this year concerning an Environmental Protection Agency (EPA) proposal with respect to oil drilling operations. They note that the American Petroleum Institute estimated the cost at $45.5 billion per year, a figure which they then refute by referring to a letter in the Wall Street Journal by EPA Assistant Administrator for Water and Waste Management, Thomas C. Jorling. However, an editorial that ran opposite the Jorling letter notes that the episode resulted in the House Commerce Committee's voting to eliminate EPA's power to regulate the wastes associated with oil and gas exploration. Part of the reason, according to the editorial, was that "four months after the EPA published its regulations in the Federal Register it set out to discover what the hazard was."

Page 25 - The authors cite a report that Volvo (the Swedish automaker) has been very critical of U.S. auto manufacturers' estimates of the costs of meeting federal regulations. While the authors greatly question the veracity of U.S. data, they accept the statement of Volvo without question.

Page 25 - Even assuming the authors are correct in that the cost of compliance in the example cited was $20 less than what the industry contended, it does not follow that the "industry reaped every year an extra $100 million in profit disguised as the cost of the safety device."

Page 26 - The authors imply that benefit-cost analysis cannot take into account the "learning curve", whereby the initial (unit) cost of meeting a regulation may fall over time. This may be legitimate criticism of some analysts but not of benefit-cost analysis.

Page 26 - The authors note that "[r]egulation, for instance, has fueled the growth of the pollution device and chemical industries, whose investments, in turn, have become vital links in the circular flow of goods and services in the economy." (They make the same argument at other points in their report.) Viewing the creation of an industry as a benefit, however, fails to take into account opportunity costs. The benefits of regulation in the pollution area are those that flow from reductions in pollution. The resources used in the industries at issue are a cost to the economy, not a benefit.

Page 26 - At the bottom of the page and at the top of page 27, the authors contend that: "All of the limits of the market, in other words, become the biases of cost benefit analysis, biases which invariably lead to an overstatement of costs and an underestimate of benefits." This is not accurate. Lack of information, limiting assumptions, and analytical deficiencies can lead to understatements of costs and overstatements of benefits just as easily. The authors' error in treating the growth of the pollution abatement industry as a benefit to society is a case in point. On the other hand, one of the significant costs of regulation often overlooked and very difficult to quantify is the adverse impact of limiting consumer choice. If, for example, regulation stipulates the energy-efficiency of appliances, the relative riskiness of consumer products, and other attributes of consumption goods or production circumstances, the range of choices available to consumers is diminished. In most benefit-cost analyses, there is no attempt to quantify this factor (though many times it is noted). In some cases this leads to an understatement of the cost of regulation.

Page 27 - The authors set forth six definitions of the cost of regulation and proceed to criticize various estimates on the grounds that they do not incorporate the appropriate definition of the cost or that the authors mix cost concepts. (Here I will assume that there are transcription errors in definitions (3), (4), and (6): the term "plus" apparently should be "minus".)

First, it seems to me that definition (6) should not be considered the appropriate measure of cost (as the authors allege) if we think in terms of a benefit-cost framework. The reason is that (if I understood what the authors really intended), this is simply the difference between the gross benefit and gross cost of regulation. From my reading of Professor Weidenbaum's work and my conversations with him, for example, he never intended that his study net out the benefits of regulation. Rather, his purpose was to address the cost side of the regulatory "equation" (Note that the title of his most frequently cited study is, "The Cost of Federal Regulation of Economic Activity"; moreover, at page 3 Weidenbaum states: "The focus of the study is only on cost; no judgments are expressed on the value of the many regulatory efforts.")

Page 28 - The authors imply to the casual reader that the only hard evidence Professor Weidenbaum has is the administrative costs of regulation and that the compliance costs are simply estimated by assuming a multiplier -- 20, as a matter of fact. Yet, in Professor Weidenbaum's study, compliance costs are compiled (from available estimates) for the year 1976, and it is observed that these are approximately 20 times the administrative costs. Weidenbaum's use of the multiplier is only to estimate compliance costs for more recent years. The justification for this approach is that, short of additional research, we might assume that the ratio between compliance costs and administrative costs today is approximately the same as existed in 1976.

Page 29 - Of course, the authors are correct in pointing out that with different agencies the (implied) multiplier is different and that if administrative costs change in non-proportional ways the aggregate multiplier is accordingly altered. However, without such an adjustment having been made, it is difficult to tell whether Professor Weidenbaum's multiplier is too high or too low.

Page 30 - The point is made that at some points Professor Weidenbaum's estimates are of gross costs, whereas in other places they are of net costs. To the extent that net-cost definitions are reflected, this of course results in an underestimate of the gross cost of regulation.

Page 30 - The authors also question Professor Weidenbaum's use of Bureau of Labor Statistics data "in a manner never intended." Unfortunately, researchers frequently have no alternative but to use data in a manner "never intended". First, agencies seldom are able to predict the opportunities for using data, and secondly, as I have experienced, agencies are not always responsive to the needs of researchers. The relevant question is whether use of the data imparts a bias one way or another on the results Professor Weidenbaum has developed.

Page 30 - The authors suggest that one of the manipulations Professor Weidenbaum performed in estimating the cost of government-mandated automobile safety devices results in an overestimate of this cost element. Their point is well-taken.

Page 31 - The authors characterize the Business Roundtable's study as being more "careful" in isolating incremental costs.

The authors point out that the Roundtable's estimate of the incremental cost of OSHA at $184 million is consistent with the "results of an exercise performed by David R. Bell of the Office of Accounting Analysis at OSHA." However, the Business Roundtable's study included only 38 companies. Thus, it is not surprising that the Roundtable's figure is smaller than Weidenbaum's, considering the difference in the definition of cost, the limited number of firms surveyed, and the limited number of agencies addressed.

Page 31 - The authors quote Professor Weidenbaum as saying that there had been no improvement due to OSHA and contend that he was wrong by quoting studies by John Mendeloff and Robert Stewart Smith. While there may be some disagreement on the precise impact, careful researchers have failed to uncover truly significant benefits due to OSHA regulation. For example, the Spring 1979 issue of the Bell Journal of Economics carries an article by Professor Viscusi of the Department of Economics at Northwestern University (whom the authors later cite in support of their views) which concludes that:

> "The analysis of pooled time series and cross section data on industry health and safety investments and injury rates for the 1972-1975 period failed to indicate any significant OSHA impact for the data set analyzed."
> [W. Kip Viscusi, "The Impact of Occupational

Safety and Health Regulation," Bell Journal of Economics (Spring 1979), p. 17.]

Moreover, while Professor Smith's study (cited by the authors) did find a statistically significant (safety) impact for OSHA in 1973, he failed to find a statistically significant impact for 1974. [See Robert Steward Smith, "The Impact of OSHA Inspections of Manufacturing Injury Rates," Journal of Human Resources, XIV (2), p. 145.]

Page 32 - The authors express some disagreement with Professor Weidenbaum's definition of regulation, over which costs should be included as paperwork burden. I would tend to agree that some of these costs should not be included, at least as I would define the term regulation.

Page 32 - The authors' summary condemnation of Professor Weidenbaum and his study seems, to me at least, unwarranted. To me, the most outstanding characteristic of this (distant) exchange between the authors and Weidenbaum is that the authors fail to note that in many cases Weidenbaum recorded the compliance cost of a government regulatory phenomenon at zero because no estimate had been found in the literature. This, obviously, is a source of substantial downward bias in Weidenbaum's cost calculations.

Page 34 - The authors argue (withoug persuasion, it seems to me) that the cost of the automobile buzzer interlock should be omitted from estimates of the cost of regulation because this was an idea advanced by industry as a substitute for the proposal to mandate the installation of airbags. Yet, had the airbag standard been promulgated at the time, the cost estimates would have been substantially higher.

Page 34 - The authors suggest omitting the costs the companies incur in litigating regulation; a position that lacks persuasiveness in my view. (Certainly resources are used in the process.)

Pages 34-35 - The authors argue that a program of waste disposal of toxic substances, if employed 25 years ago, would have resulted in significant savings today. This assumes perfect foresight, or else neglects the point that prevention is costly in every instance whereas cleanup occurs only when there are accidents.

Page 35 - The authors correctly point out that capital costs should be annualized if they are to be compared with an annual stream of benefits. While the Roundtable's study did not do this, neither did it include capital expenses incurred in earlier years -- which, if an annualization were made, would have to be included. The direction of any resulting bias is not clear.

Page 35 - In their discussion, the authors appear to confuse what is known as "the cost of capital" with "capital costs." Capital costs are approximately the same as depreciation. The cost of capital is the interest component paid for the use of capital.

Page 35 - The authors criticize the Roundtable study for not adjusting the cost figures for such items as revenue from new products created by regulation, investment tax credits, and other tax benefits. First, as indicated above, additional resources used to meet regulations are a cost, not a benefit. Tax write-offs, of course, represent redistribution, not a change in cost. That is, a tax saving to one person represents a tax increase to someone else.

Page 36 - The authors compare the Roundtable's estimate of incremental regulatory costs with an estimate of the health benefits of measures to reduce air pollution. There is a substantial bias in this comparison. First, the Business Roundtable's study covered only 38 of the largest firms. Second, it defined cost as the increment of cost over and above that which would have been incurred by the firms in the absence of regulation. Thus, it would be inappropriate to compare this net cost measure with the gross benefits of reductions in air pollution, since presumably some of these benefits would have flowed in the absence of regulation.

Page 38 - A footnote on this page characterizes the Roundtable study as disparaging the Weidenbaum estimates. As I recollect, the Roundtable study took no issue with the Weidenbaum estimates, but merely noted their existence. Curiously, in the same footnote, the authors refer to a General Accounting Office (GAO) analysis of an Office of Management and Budget (OMB) study in which GAO concluded that the annual cost of regulation was between $53.8 and $38.8 billion per year (including state and local regulation). The authors, however, fail to mention that the OMB estimates were higher than Weidenbaum's.

Page 41 - The authors state that because the "discounted future earnings" method of evaluating the "cost of a life" ignores income from wealth, it is biased downward. To the degree that the discounted future earning approach is appropriate, it is not biased downward because of income from wealth considerations -- such income continues to flow even in the absence of the individual.

Page 41 - The authors note that the choice of discount rate makes it difficult to estimate benefits. It should be noted that this problem also makes it difficult to estimate costs. However, if the time profiles of benefits and costs are approximately the same, then the chances of error in deciding upon the desirability or undesirability of a given initiative are rather insensitive to the discount rate chosen.

Page 42 - The authors contend that the appropriate social rate of discount may differ substantially from the market rate of discount and imply that this is a problem of benefit estimation. But it is also a problem of cost estimation, (e.g., if a higher than warranted discount rate is used, the present value of cost will be too low). The authors also state that "positive discount rates discriminate against future generations since the further away from the present are the benefits, the less they are worth." But a point made by Gordon Tullock is that since historically, incomes have been rising, it would make sense to use a higher than market rate of discount when it comes to questions of redistributing income from present generations to the future. (In other words, the same argument presently made for redistributing income from rich to poor can be made to say we should be reluctant to redistribute income from present to future generations.)

Page 42 - The authors note correctly that one benefit of reducing risk is that it removes anxiety from the population at risk. Although this is difficult to quantify, it is an element that should be considered in any benefit-cost calculation.

Page 42 - Beginning at the bottom and continuing on page 43, the authors disparage the discounted future earnings approach because "[i]t cannot appraise the benefits from avoiding damage to property and things of aesthetic value." But these factors are totally unrelated to the loss of life. Of course, in any analysis, benefits which are related to "property and things of aesthetic value" need to be included along with benefits arising from a reduced probability of accidental death.

Page 43 - The authors make the important distinction between a *risk* of death and a certain death. People's own perceptions change, depending upon their aversion to risk at their levels of risk. For example, a person might accept a one chance in a thousand risk of death in exchange for a thousand dollars, but not a million dollars for a 1.0 probability (and thus certainty) of death. This suggests that it might be appropriate for society to pay a thousand dollars for a reduction in risk of one chance out of a thousand, but more than ten times this amount for a reduction in risk of ten chances out of a thousand. And, the collective decision might appropriately be to pay more or less depending upon the *incidence* of the reduction in risk and the distribution of this reduction in risk (say, among income classes).

Page 45 - The authors state that,

> "Those who are more educated and those who receive higher incomes do not face a relevant trade-off between wages and risk. Such trade-offs exist predominantly among the poor; in fact, those who have proportionately lower incomes face the highest risks."

The evidence on the relationship between income and risks is not overwhelming, although there appears to be some inverse correlation between income and occupational risks. The fact, however, is that most individuals, including those in very high income categories, face trade-offs between income and risks, although the extremes of Howard Hughes are clearly the exception. If the trade-off is not directly perceived in terms of pecuniary income and risks, it exists nevertheless. (For example, one can reduce the chances of heart attack through appropriate dieting, giving up smoking, and certain types of exercise.)

Page 45 - The authors suggest that the research of Professors Thaler and Rosen results in a downward bias in the revealed "willingness to pay" estimate. While Thaler and Rosen admit that the mean earnings of their sample is a "bit less than average earnings among male manufacturing workers during this period," it should be noted that earnings in manufacturing generally exceeded earnings overall. (See Economic Report of the President, 1970, p. 212.)

Page 46 - The authors note that a lack of mobility within institutions, income classes, races, sexes, and union membership may play an important role in the results. But it is not clear whether this imparts a high or low bias to the Thaler and Rosen estimates. For example, institutional rigidities, to the degree they exist, may restrain a worker from leaving a low-risk, low-risk-premium job to go to a preferred high-risk, high-risk-premium job just as well as the other way around.

Page 49 - The authors sum up the relationship between regulation and inflation in excellent form: "Regulation is inflationary if costs exceed benefits or, alternatively, if it does not achieve its goal in the least costly manner. Regulation is deflationary if benefits exceed costs."

Page 49 - The authors are absolutely correct in saying that the actual impact of regulation on inflation is difficult to isolate in such measures as the consumer price index. Not only is it the case that on occassion benefits do not show up, but costs do not either. As Bruce Yandle and I said in the introduction of our recent AEI volume:

> [A] narrow focus on the impact of federal regulations on conventional price indexes such as the consumer prices index (CPI) would not be particularly helpful since the impact on a gross static such as the CPI of even the most costly regulation would be minimal and difficult to determine with any precision, and many benefits and costs of regulatory activity would not show up in the price indexes or would appear in contradictory ways. [James C. Miller III and Bruce Yandle, Benefit-Cost Analyses of Social Regulation: Case Studies from the Council on Wage and Price Stability (Washington: American Enterprise Institute for Public Policy Research, 1979), p. 6.]

A footnote at that point reads:

> Take, for example, a regulation to require a firm to reduce the amount of effluent it discharges into a river. A price index would reflect benefits in the form of lower costs of processing downstream river water into drinking water (the effect of which would be to lower the price index), but benefits in terms of having the river cleaner for fishing, swimming, or just being near would show up in terms of higher land rents (raising the index).

ge 49 - The authors also note that with changes in the relative prices of commodities reflecting differences in the costs of government-mandated regulation, the conventional price indices would overestimate the true effect. Of course, this is an endemic problem with a Lespeyres Index (which is based on the previous "basket" of goods and services): the comparison of the second period with the initial period overestimates the inflationary impact. (The alternative approach -- the Paasche Index -- uses the second period "basket" of commodities and underestimates the inflationary impact.) The point, however, applies whether it is a regulation-induced price change or one resulting from, say, an artificial stimulation of aggregate demand.

Pages 49-50 - The authors go on to describe several studies which have concluded that the aggregate effect of regulation on the consumer price index has been very small -- on the order of one percent or less. However, the authors appear to miss an extremely fundamental point, which is surprising in view of their excellent characterization on the previous page of the relationship between regulation and inflation. That is, regulation-induced inflation represents a decrease in the real supply of goods and services, whereas a regulation-induced deflation represents an increase in aggregate supply. (See prepared statement.)

Page 50 - The authors proceed to discuss the relationship between regulation and productivity -- closely related to the aggregate supply issue discussed above. After defining productivity as "the amount of measured output per unit of input," they state that: "Like the CPI, the index for productivity excludes the productive benefits of health and safety regulation." This is an overstatement. Take, for example, a regulation to require a safer and healthier workplace. As the authors indicate elsewhere, the result will be lower absenteeism and higher quality work. As a result, output for the given (labor) input will be greater, and thus the internal benefits will show up in the productivity measures. An important point is that in many cases a substantial portion of the benefits of regulation are internal and thus show up both as productivity increases and as having a depressing effect on costs (and thus prices).

Page 51 - The authors allege an "incapacity of the productivity accounts to appraise quality changes of goods," and then state that "[one] type of quality change which is not reflected in BLS statistics is an alteration in design which lowers operating costs, like more fuel-efficient automobile engines and crash-resistent bumpers." As I understand the process, when, say, an automobile would otherwise have cost $4,000 but because of government-mandated regulation instead costs $4,400, the BLS "credits" the company the four hundred dollars for the mandated cost increase due to regulation. Thus, as opposed to the previous period, the BLS price index shows no inflationary gain -- no inflationary effect due to regulation. The reason is that BLS considers the cost increase as having increased the quality of the product by an amount valued by consumers equal to the cost increase.

Page 51 - Here and on page 52 the authors criticize Dr. Edward Denison's analysis of the effects of regulation on productivity. They note that while Denison had concluded that "productivity would have been 1.4% higher in 1975 'had business operated under 1967 conditions'," they point out that worker safety and health measures were responsible for only 0.4 percent of this reduction in productivity. Yet, in his study Denison cautioned the reader:

> Through 1975, the last year covered by the estimates in this article, only moderate costs seem to have been imposed upon business by [the Occupational Safety and Health Act].
>
> Through 1975, relatively little OSHA regulation had been imposed in the area of health. Health regulation is likely to be much more costly because it is new and will require greater changes in existing practices. Costs will be especially large if OSHA adheres to the principle that personal protective equipment, such as earplugs and earmuffs to reduce noise, should not be relied upon to meet standards. [Edward F. Denison, "Effects of Selected Changes in the Institutional and Human Environment Upon Output Per Unit of Input," Survey of Current Business (January 1978), p. 36.]

Page 52 - The authors accurately point out that Denison assumes that pollution control equipment displaces otherwise productive equipment -- that is, he did not consider the benefits bestowed by such equipment. In short, Denison's approach does not include either the internal or external benefits generated by measures to reduce pollution. (As mentioned earlier, the former, taken alone, would have the effect of increasing productivity.)

Page 53 - On the other hand, contrary to the authors' assertion, Denison's estimate of the productivity impact of regulation on mine safety does incorporate the productivity-increasing effect of regulation (fewer injuries and fatalities].

Page 54 - Here, and for several pages, the authors discuss the effects of regulation on innovation. Admittedly, this is an extremely difficult area for analysis, for in a sense one is spectulating on what information would have been generated and what processes would have been developed had conditions not been what they were. The authors distinguish between government regulation as an instigator of innovation, and regulation that retards innovation. They go on to imply, that unambiguously regulation which retards innovation is harmful but that which instigates innovation is beneficial.

It must be pointed out that for any given set of opportunities and costs, there is an optimal amount of innovative activity. Under most circumstances a free market approximates this goal. When regulation restrains innovation (for example, the delayed introduction of the unit train and restraints on cable television) the market is made less efficient. But also, when government activities artificially stimulate innovation -- especially in dimensions not very reflective of consumer wants -- there are often inefficiency costs.

Page 55 - Despite having discussed the importance of quality changes in previous sections of the volume, the authors note that the Food and Drug Administration's (FDA) ozone standard reduced costs when the aerosol can was replaced by the pump spray. Quite arguably, the pump spray was less expensive to manufacture than the aerosol model, but this, presumably, represented a decrease in the quality of the product. And the example of automobile owners saving money on government-mandated bumpers is somewhat puzzling, inasmuch as individual choice did not "demand" such design changes. (Moreover, there is the cost of uniformity, as described above.)

Page 56 - The authors cite the example of the installation of noise reduction equipment in the Swedish paper industry as not only reducing the noise exposure from 110 dB(A) to 85 dB(A) at a small increase in the cost of the new equipment, but also increasing productivity. The relevant question here is how much more productive the machines might have been without the noise-supressing features, and how much less the new machines might have cost had the features not been required (the net difference being a reflection of the cost of the regulation).

Page 57 - The authors note that much of the information on the impact of regulation on innovation is anecdotal, and that there is a lack of a clear-cut consensus. A relevant question is whether the existing approach to regulation minimizes any adverse impact upon the direction of innovative activity.

Pages 57-59- and 114-120 In both sections, the authors present a lengthy criticism of the attempt by Professor Sam Peltzman to measure the impact of the 1962 amendments to the Food, Drug and Cosmetic Act. Their two major points are (a) Peltzman fails to adjust for the already-evident secular decline in drug innovation prior to 1962, and (b) Peltzman's indices of drug innovation are faulty. Suffice it to say that a considerable controversy yet rages over the important point Peltzman raises. While some research and informed opinion has raised certain questions about Peltzman's work, other research and equally informed opinion has been consonant with Peltzman's findings. The problem with this report is that it gives only one side of the story. For contrary views, see Peltzman's reply to the FDA's comments on his work [Sam Peltzman, Regulation of Pharmaceutical Innovation: The 1962 Amendments (Washington: American Enterprise Institute for Public Policy Research, 1974, pp. 85-89]; Sam Peltzman, "An Evaluation of Consumer Protection Legislation: The 1962 Drug Amendments: A Reply," Journal of Political Economy (May/June 1975), pp. 663-668; and Henry G. Grabowski, Drug Regulation and Innovation: Empirical Evidence and Policy Options (Washington: American Enterprise Institute for Public Policy Research, 1976), esp. pp. 27-30 and 65-74.

Page 50 - On this page and the next two, the authors discuss what is known about the variables affecting the rate of innovation. They correctly report that innovations often come from unexpected sources and that many hypothesis have been developed (including a relationship -- for which there is little evidence -- between innovative activity and firm size). The point is that a lot of factors affect the rate of innovative activity, but regulation may well be one of them.

Page 61 - On the whole, the authors' conclusion that "[m]arket concentration, colossal firm size, and barriers to entry...seem to be far more correlated with decreased innovative activity than does regulation" appears unwarranted, as the evidence simply does not indicate a strong correlation with these variables (as the authors seem to concede in the previous paragraphs). Moreover, it is important to note that the current "wave" of health and safety regulation is a relatively new phenomenon, the possible impact of which innovation has not been analyzed in great depth in the existing literature. (Thus, it is not surprising that to date no strong correlations have been observed.)

Page 61 - On this page, and continuing through the next, the authors discuss the effects of regulation on unemployment. This certainly is a controversial issue, on which there is some disagreement among professional economists.

The least disagreement is found concerning the effects of minimum wage legislation and Department of Labor regulations issued under provisions of the Davis-Bacon Act. Both serve to establish floors below which wages in a variety of employment situations may not fall. Whatever the humanitarian intent of such regulations, it is clear from the economic literature that they constrain employment opportunities and thus "create unemployment."

The evidence on the employment impact of social regulation is less clear-cut. Everything else equal, a regulation that increases the cost of any product will reduce the demand for labor in that industry. However, some preliminary research I have completed suggests that many of the regulations promulgated by OSHA have reduced the marginal cost of labor relative to the marginal cost of capital and thus have led employers to substitute labor for capital. In terms of empirical outcome, the question is whether the simple price elasticity of the demand for the industry's output is greater or less than the firms' marginal rate of substitution of labor for capital. (If the demand is less price elastic than the marginal rate of substitution, then even though unit costs, and prices, rise, total employment may actually increase; on this, see my working paper, "Is Organized Labor Rational in Supporting OSHA?," processed 1978.)

Page 64 - The authors argue that "market" approaches to regulation, such as charges and fees, are fraught with difficulty, since

> "[r]egulation is required not merely to correct for market failue, but also to protect fundamental liberties and primary goods...[and]...[t]axation of pollution and incentive approaches do not make provisions for quality."

Frankly, I do not understand the point being made, but in the next line the authors argue that "[a]t best market efficiency means payment, not necessarily prevention; compensation, not restoration." What the authors appear to miss is that under the present (command-and-control) approach permission is granted for polluters to generate a certain amount of pollution. (This is what "grandfathering" rights are all about.)

As Robert Crandall once expressed to me, the current system can be described as "pollute for free" rather than "pollute for fee."

Page 64 - The authors' major criticism of the fee approach is that it requires important information about the costs and benefits of pollution reduction. However, for a regulatory agency to establish an efficient set of standards, the same information must be forthcoming. Thus, a lack of information is not a criticism of the fee approach, but an endemic problem of regulating.

Page 65 - Here the authors argue,

> The same body of information costs and benefits, probabilities and risks, that is required to engage in cost-benefit analysis and 'command-and-control' regulation is also needed to set taxes at efficient levels.

This is incorrect. Frequently less information is needed in the case of market approaches. The reason is that intricate knowledge need not be acquired. The regulator simply estimates the marginal benefit at the expected level of pollution reduction, sets the tax equal to that amount, and observes the polluters' response. In such manner, polluters are led to choose the least costly way of meeting the overall pollution-reduction requirement implied by the fee. The problems of agencies acquiring cost data and polluters misrepresenting cost data are obviated.

At base, the preference for "command-and-control" approaches hinges on the alleged lower costs of monitoring. That is, a government agency can more easily determine whether a firm has installed the appropriate technology than monitor its level of effluents. (Note that a relevant factor is that in the case of a tax on the effluent, the firm has an incentive to maintain the equipment in good order, whereas with the standards approach, the incentive is considerably reduced.) One aspect of this preference is that it may stem from government agencies preferring to shift more of the cost of pollution control onto the private sector, since, arguably, fewer government resources would be expended.

One of the major benefits of the tax approach is that it is more likely to lead to a cost-effective program of pollution abatement. Under a standards setting approach, the specific means of pollution reduction are prescribed. However, the appropriate technology may differ among firms. Moreover, a standards approach stifles innovation, for the firm has little incentive to find a cheaper way of reducing the effluent discharge or of reducing it further under the given technology (resulting in a lower tax payment).

Page 66 - The authors point out that in one example of the application of EPA's "bubble" concept the steel company at issue had proposed to substitute more coke oven emissions for less dust emissions from iron and ore, and that this would not be in the public interest because coke oven emissions are significantly more carcinogenic. To the extent this is true, it is merely a revealing of a misstatement of the appropriate measure of pollution -- a problem which is as likely to arise under a standards-setting approach as under a taxing scheme. (The obvious solution is to establish a much higher tax for the carcinogenic emissions than for the non-carcinogenic emissions -- in response to the difference in the marginal benefits of reducing the effluents in question.)

Page 67 - The authors describe the West German water pollution abatement program which incorporates certain aspects of a tax approach. But the existence of imperfections in the German program do not necessarily mean that a U.S. program need suffer from the same shortcomings.

Page 69 - The authors propose an interesting and fascinating dilemma in connection with regulated utilities: how would they respond to a tax approach to pollution abatement, and would this be preferable to a system of standards? The problem has to do with the "cost-plus" nature of price regulation in this area. In other words, would public utilities simply "pass through" the tax and not endeavor to reduce effluents in the way economists allege? While this is difficult to analyze with great precision, one would expect the companies to have and to respond to economic incentives. To conclude otherwise is to question why regulated utilities do not simply grant infinite wage increases to their workers and pay infinite prices for their capital inputs. While a great deal of theoretical and empirical work has been carried out on the bias in public utility input mixes (stemming, in large part, from the classic contributions of Professors Averch and Johnson), it is beyond question that public utilities engage in a considerable amount of cost-minimizing activity. (Whether the resource input mix on the whole is technically the most efficient is subject to some question.) One would expect utilities to respond to taxes on pollution by reducing their effluents where, by and large, the marginal benefits exceeded the marginal costs.

Page 70 - The authors quote from a study by Professor Anderson *et al*. in which Anderson and company describe the *ideal* device for measuring effluents from a plant and characterize this as "the pursuit of science fiction." The clear implication is since such devices do not exist (and are not likely to exist for some time) the tax approach is infeasible. But just because the ideal form cannot be realized does not mean that an alternative approach should not be selected. Certainly the standards-setting approach is fraught with considerable imperfections of its own. The relevant question is whether the imperfections of the fee approach are greater or less than the imperfections associated with the standards-setting approach. An *ideal* approach to standards-setting would read no less like "science fiction" than the quotation cited by the authors.

Page 72 - The authors suggest that under the performance standards approach, "[a]dded burdens may be imposed as well on small businesses that do not have the in-house technical expertise that large firms often possess to experiment with compliance strategies." But the relevant question is the relative disadvantage placed upon small firms. Certainly, judging from the considerable attention given the problem, it would seem that technical or design standards have burdened small firms (relative to large firms) significantly in recent years.

Page 72 - The authors state that cost-effectiveness requires choosing "[t]hat method which achieves the goal in the least costly way..." The obverse should also be noted: cost-effectiveness requires maximizing the "goal" for a given resource expenditure. The authors are correct in pointing out that in some cases the alternatives to a given regulatory proposal imply a lower goal or a different set. But in many cases alternatives have been rejected which could have achieved even "higher goals" at lower costs.

Page 73 - The authors discuss the use of personal protective equipment, such as respirators. Obviously, it is sensible to assume that most workers would prefer not wearing respirators, ear protectors, or whatever, everything else being equal. But overlooked is the fact that workers receive premiums for such "onerous" working conditions. That is, if the working conditions were substantially improved, the supply price of labor would go down. [Tragically, in many cases involving occupational exposure, OSHA has mandated significant, costly engineering controls which are technically incapable of meeting "safe and healthful" levels, resulting in the workers having to wear the equipment anyway; and even in some cases where they are allowed to remove the equipment, the danger (in terms of exposure) may actually increase.]

What OSHA often fails to do is to consider requirements for engineering controls in those areas where their cost is "low" and personal protective devices in those areas where the cost of such controls is "high".

Page 73 - The authors' discussion of the adverse impact of personal protective devices on worker productivity would appear to be misdirected. The reason is that these costs are internalized by the firm -- that is, firms have an incentive to install engineering controls in response to productivity decreases caused by the wearing of personal protective equipment.

Page 73 - Moreover, it is not true, as the authors claim, that cost-effectiveness analysis would ignore "the increased cost of production which accompanies the use of respirators." A poor analysis might, but a good analyst would not.

Page 76 - Here and subsequently in this chapter, the authors describe in some detail the current costs associated with phenomena regulatory agencies are meant to address. What is not put in perspective is (a) whether it is feasible to eliminate such costs at any price, and (b) the degree to which regulation currently addresses these issues. Thus, what the authors describe might best be viewed perhaps as potential benefits of regulation, but they are not necessarily realized at the present time.

Page 77 - The authors imply that the "nit-picking" regulations which have been criticized by Professor Weidenbaum and others, including President Carter, were in fact suggested by industry itself. This is substantially incorrect, for the episode was one in which the advisory practices established by the American National Standards Institute were summarily adopted by OSHA as mandated standards soon after the Act was passed. [See Philip J. Harter, "In Search of OSHA," Regulation: AEI Journal on Government and Society (September/October 1977), pp. 33-39.]

Page 82 -The authors note that at present OSHA has promulgated standards for only 21 carcinogens in the workplace. This is slightly misleading, inasmuch as there do exist exposure standards for additional toxic substances. OSHA has promulgated only 21 new, significantly tighter standards.

Page 82 - The authors state that with respect to OSHA's activity in the carcinogen area, "every effort has met with resistence by industry and by economists on the Council on Wage and Price Stability (COWPS) and/or the Regulatory Analysis Review Group (RARG)." To my knowledge (and I was in charge of the COWPS effort for over a year), no OSHA initiative has been directly opposed by COWPS or RARG. Rather, the economists have urged for cost-effective approaches and thorough assessment of alternatives.

Page 84 - While I was at the Council on Wage and Price Stability we did urge the adoption of many regulations, contrary to what is alleged by the authors. Moreover, it is important to note that, especially in the areas of worker exposure, the staff of the Council did not often possess the relevant information and expertise to identify regulatory "targets of opportunity." Instead, the regulatory agenda was largely established by the regulatory agencies. Our contribution was mainly to provide economic analyses based on the information presented in those cases.

Page 85a - The authors quote a Department of Labor document which alleges that reduced workers' compensation premiums would be a benefit derived from an initiative to reduce occupational exposure. This is an argument found over and over in OSHA documents describing the benefits of regulation. However, to include worker compensation is to double-count the benefits, because (not counting administrative costs) worker compensation is really a matter of redistribution. That is, if firms pay lower premiums, then workers receive less compensation.

Page 89 - In their discussion of the benefits of EPA regulation the first case the authors cite involves the Tennessee Valley Authority. This points up a notable problem in the environmental area, namely that federal government installations are often the worst offenders and the last to meet EPA standards.

Page 95 - The authors argue that cost-benefit analysis does not take into account situations in which "[p]roper waste disposal is the least costly route in the long-run..." Of course, a proper cost-benefit analysis would examine all benefits and costs, whatever the time period.

Page 97 - The authors contend that "[a]uto manufacturers have not merely neglected safety; they have shunned it." But the history of automobile manufacture is replete with examples of major safety improvements introduced long before federal regulation (hydraulic brakes, safety glass, et cetera).

Page 99 - The authors characterize Professor Peltzman's work on the benefits of drug and auto regulation as one "that presumes regulation not to be worthwhile will prove that regulation is not worthwhile." In my judgment this charge is totally without merit.

Page 103 - The authors reference a NHTSA study reporting that 1979 bumper systems weigh thirty-five pounds less than 1973-74 systems, when the standard first took effect, and that they are not only stronger but are cheaper. Of course, various aspects of automobiles change not only because of regulation, but in response to changes in technology and consumer demand. (Arguably, part of the reduction in the weight of the bumper systems is in response to the federal requirements for increased mileage.) Surely it would be relevant to know how much the bumpers would have weighed, how expensive they would have been, and what other characteristics they might have had (including aesthetics) had regulation not been implemented.

Page 104 - The authors contend that NHTSA regulation will actully produce substantial savings for consumers. First, if this were the whole story, than it is difficult to see why regulation was needed; the competitive market would have led to such an outcome. Second, the "down-sizing" program has certainly changed the quality and character of the automobile, and if one is to say that such would not have been demanded by consumers, than this is a reflection of the value to consumers of those earlier quality characteristics.

Page 104 - The authors note that when the interlock system was no longer required, the automobile companies granted price reductions significantly less than their estimates of cost. Yet, with substantial inflation during this period of time, automobile companies periodically increased prices (as they still do). My suspicion is that they simply took the occasion for a normal price increase rather than first readjusting the prices downward and then announcing an ordinary price increase. (What I am saying is that the price reduction announced would be expected to underestimate the real cost of the systems.)

Page 110 - The fact that Volkswagon was the first to introduce the passive belt is noted by the authors. Interestingly, this market response came prior to the federal requirement. (In other words, the market responded to a demand for passive restraints.)

Page 123 - The authors note that in July of 1976 the CPSC endeavored to establish a set of priorities to govern its regulatory activities. This initiative was welcomed by the economists at the Council on Wage and Price Stability, and the Council testified before the Commission at the time, urging that emphasis be given to those areas where the net benefits would be greatest.

Page 124 - The authors discuss at great length the CPSC case concerning the alleged risk from aluminum wiring and argue that as a result of delay a number of (avoidable) accidents have resulted. Yet, to judge whether "retrofitting" would be desirable one must find out the relative risks of aluminum wire versus copper wire. After all, there are many cases where copper wire fails as well.

As the authors note, more than 1.5 million homes built between 1965 and 1973 have aluminum wire in their branch circuits. This suggests the existence of several hundred million terminations of aluminum wire (the point at which aluminum wire is wrapped around a screw on an outlet or switch). If aluminum wire terminations were a substantial hazard, one would predict a large number of fires. Yet, while allegations have been made that particular fires were caused by aluminum wiring, the evidence is not clear. For example, the authors mention the Beverly Hills Supper Club fire and say that it "is believed to have been caused by old technology aluminum wiring" (p. 125). In fact, the complaint in the Supper Club fire litigation simply copied the CPSC's allegations without providing any independent analysis, and the CPSC's own investigator attributed the cause of the fire to a very different phenomenon.

Page 127 - The authors here and on the following two pages discuss the CPSC lawnmower standard, arguing that it is on the whole very beneficial. This case was dealt with in considerable detail by the Council on Wage and Price Stability, which came to a significantly different conclusion. [See, for example, Thomas M. Lenard, "Lawn Mower Safety," Chapter 5 in James C. Miller III and Bruce Yandle, Benefit-Cost Analyses of Social Regulation: Case Studies from the Council on Wage and Price Stability (Washington: American Enterprise Institute for Public Policy Research, 1979).]

Mr. GORE. Thank you very much.

Dr. Ferguson?

## STATEMENT OF ALLEN R. FERGUSON, PH. D.

Dr. FERGUSON. Mr. Chairman, thank you very much for inviting me to appear here this morning. My written response and the bulk of what I shall say orally pertains to an earlier version of Dr. Weidenbaum's paper rather than the one that I received yesterday "The Continuing Need for Regulatory Reform." My comments pertain predominantly to the earlier, "The Trend of Government Regulation of Business." I have little to say about his second paper that was distributed to me yesterday, "Benefit-Cost Analysis of Government Regulation."

I need, like Jim Miller, to point out that these are my views, not my institution's.

With regard to his paper, "The Trend of Government Regulation" or "Continuing Need for Regulatory Reform," which is very similar, I will comment on four major areas: The relevance of the paper, some questions of validity or interpretation, omissions from the paper, and then I shall make some new comments on what to me was new material on alternatives to and approaches to regulation.

Let me begin by making some comments on the scope of the paper. It really deals only with a small fraction of the total problem. It deals essentially with the costs of regulation, and within that deals primarily with the costs of quality-of-life regulation. It is widely agreed among scholars that there is a major area where virtually all of the costs of regulation could be saved to the public with little or no loss of benefits, gross as well as net. That is the area of cartel regulation, and unfortunately that tends to get left aside somehow in the current discussion of regulation. There would be a great deal of sense in tackling the problem where we are sure there is room for improvement rather than devoting a great deal of our attention to an area where there are clearly some benefits as well as some costs with present regulation.

Now I want to pick up some of the questions of the relevance of particular information in Professor Weidenbaum's paper. He begins, within his constricted framework, with a review of some growth in the aggregate measures of Federal regulation. The first question is what is the relevance of these statements about size and growth of the regulatory practices. The impression that I feel is given in the paper is that a showing of great growth is supposed to constitute a showing of excessive growth, and that obviously is simply not valid. The paper never says that. The paper simply suggests it, and if that is not the purpose, then it is a question of why was it not put into a context which made clear the relevance of these points.

For example, Professor Weidenbaum shows that the number of regulatory agencies grew from 12 to 56 between 1930 and today. That sounds very impressive. If you look at it as the equivalent, namely a 3-percent cumulative annual rate of growth, that does not sound nearly so impressive. The point is not to play a game, sort of an impressionistic game with numbers. The point is that these numbers do not mean anything by themselves.

The really important point is that no particular rate of growth on its face suggests that the rate of growth of regulation is either adequate or inadequate. It is nothing but a number that may or may not have some usefulness somewhere else.

Professor Weidenbaum alludes also to a sixfold increase in the direct Federal costs of regulation in the decade of the 1970's. Again this number means nothing in itself. To talk about the rate of increase in something from a base point suggests that the base point has some meaning. In this case, it would suggest that the regulation in the 1960's was not grossly inadequate. If the level of regulation in the 1960's was about right, then one could legitimately raise some questions about a sixfold increase in it. I think that there are few people who would say that the extent of regulation in the 1960's was about where it should have been. Remember the situation in the 1960's. Lake Erie was declared to be dead, the boaters on the Potomac were urged to avoid even getting splashed, and so on. I think that any use of numbers that suggests that regulation in the 1960's was adequate, and I am talking now about quality-of-life regulation, leaves a good deal to be desired.

Further, I agree with Dr. Miller's written statement, and in fact the statement toward the end of Professor Weidenbaum's paper, that the real question is not aggregates at all. The question is a regulation-by-regulation question of whether the particular regulation is worth the candle.

To go back and pick up one thing—the fact that costs are very high means nothing. Defense costs are high. Health costs are high. Education costs are high. These things are of no consequence. These numbers are of no consequence in themselves.

Cost numbers can in fact be relevant. I do not want to leave the suggestion that I am saying that costs are not a relevant part of the evaluation of specific regulations, but it is extremely important to note that even if it were possible to measure all the costs and all the benefits in an entirely acceptable way, and to show that the costs of regulation in the aggregate were greater than the benefits from regulation in the aggregate, that would not show that there was too much regulation. I think that is the thing that tends to get swept under the rug with these discussions of aggregates.

Such a conclusion would be ambiguous. It would show that one possibility was that there was too much regulation, but it would also show that another possibility is that the regulation is inefficient, that in practice the emphasis is misplaced or is excessively costly regulation-by-regulation.

Now I want to move to questions of validity and interpretation. The first issue of interpretation is extremely broad. Professor Weidenbaum's entire discussion, and a great deal of discussion by economists—and sometimes appropriate—is based on the premise that, in the absence of some proof that it is right, there is something wrong with governmental regulation, that its function is solely to correct deficiencies in the marketplace. In fact, markets in the United States, and probably everywhere else, would not be free in the absence of Government involvement, nor would they be competitive, nor would consumers be provided with the information they need to make their decisions wisely. To put it technically, many of the basic assumptions of welfare economics upon which the conventional analysis of regulation is based are not valid in the American economy.

First, many markets are cartelized, or as a minimum and more correctly many markets are characterized by a very small number of large producers, so that the markets are oligopolistic rather than competitive.

Second, many important goods and services used by industry are not properly priced to industry. For example, industry uses social infrastructure, and industry uses environmental amenities, without typically paying anything that anyone would consider an appropriate price. That does not mean that they do not sometimes pay too much, but it does mean markets based on those prices do not maximize economic well-being.

Third, the information upon which consumers base their decisions is largely provided by producers in the interests of producers, and only by coincidence would that lead to proper, that is economically efficient, market decisions.

Finally, we do have a situation where wealth is very unevenly distributed, and this leads to a distribution of products in accordance with the historical distribution of wealth, and that is a tough one to defend on general ethical or even certain kinds of efficiency grounds.

In this situation, there is no economic justification for the conclusion that unfettered markets would maximize material welfare in the economy.

The second point of interpretation. Professor Weidenbaum alludes to a hidden tax in the form of environmental regulatory costs and other regulatory costs. That in, my judgment, is simply false. The imposition of regulation is rather designed to remove a hidden subsidy. The industries and other producers who have been contaminating the air and the water and imposing hazards on the rest of society without paying the full costs for doing those things have been subsidized by the rest of the society. So what Professor Weidenbaum calls a hidden tax is really a redress of a hidden subsidy, and the hidden-tax argument is false in principle. It does not mean that it is not accurate on occasion, but it is certainly not a matter of any general applicability.

I will touch very briefly on a portion of his paper that takes a substantial number of pages; that is the calculation of costs of regulation on automobiles. My paper spends three or four pages dealing with that, and I will just touch on the major problems.

First, there is a good deal of double counting in the table. Some regulations remove the effects of earlier ones, and there is no subtraction made for that change.

Second, and as shown in his table 2 in benefit-cost analysis of Government regulation, many of the things, many of the actions that are sometimes attributable to regulation would in fact have taken place anyway. In fact, in his example in the other paper, two-thirds of the aggregate costs are attributed to changes that would have occurred in the absence of regulation. To do the calculation that he does he assumes that during the period there would have been no improvement in seatbelts, head restraints, hazardous fuel systems, and so on, in the absence of imposition of those requirements by the Federal Government.

There are some other methodological problems with that, but in the interest of moving ahead, I shall leave them to the written record.

I will say that I feel considerably more comfortable with Professor Weidenbaum's discussion of induced effects, or more accurately I would feel more comfortable if he had entitled the section "Induced Costs." His concern about the impact of regulation on competition I think is entirely valid. It does not follow that the way to solve the problem is to reduce or eliminate regulation. The problem of monopoly should be addressed head on. It is in my judgment a major problem in the economy, and second, if regulation does, and the empirical evidence on this is at best shaky, force small firms out of industries, then the Congress and the regulators ought to have the innovative competence to find ways of solving that problem directly.

A final interpretive point I want to make, is that he defines as cost diversion of management to the coping with regulatory problems, and certainly that is a legitimate categorization in general, but given the imperfections in the market, it is not clear that all of that is a cost. To the extent that management is diverted from its other activities of making the market work worse, then clearly it is a benefit. One important general consideration, and this is an aside, is that not all the costs of regulation, not all the resource losses, would all come out of activities that would generally be accepted as being socially desirable. But it is hard to see what the market produces and to say that a reduction in second homes or in the excesses of styling and many other market products are really comparable with the gains from quality-of-life regulation.

Let me come to some of Professor Weidenbaum's omissions. First, he ignores an extremely important cost, and that is the cost that I think is well developed by Edwin T. Halfle of the University of Pennsylvania. Regulation tends to bring business into Government decisions more than in the absence of regulation, and this is a cost that needs to be considered very seriously.

Second, he ignores potential indirect benefits, ignores all benefits, but it is more interesting to look at the indirect benefits.

The imposition of regulation—that is, the removal of these hidden subsidies—tends to direct consumption and production away from environmentally intensive products and other products which have adverse side effects. More precisely, to the extent that regulation is efficient, those results follow.

There are two other kinds of benefits. I will try to wind up rather promptly, Mr. Chairman. One, which is mentioned in my paper, that regulation can substantially reduce information cost, and one that there is a benefit from public participation, and, at least in some people's minds, a shift of decisions from the private to the public sector, from the boardroom to the hearing room.

The question of information I think is absolutely central, and perhaps I can say more of that in response to some questions.

Let me then wind up by addressing the question of whether benefit-cost analysis is neutral. Clearly it is neutral in concept. I am going to sound very polyanna. Both Professor Weidenbaum and Mr. Green are correct. It is neutral and it is biased. It is neutral in concept and biased in practice. It is biased in practice primarily as a consequence of information. In most of the regulatory areas information is held primarily and comes primarily from the side of the producers, the suppliers.

Second, they are the ones with the very large resources available for participation, and they are the ones, frequently, who bear the most immediate and most highly concentrated costs.

There are also some very serious analytical problems which make it, in my judgment, more difficult to get well along in the assessment of benefits than in the assessment of costs. I have said that carefully. Spend $10,000 on both benefits and costs, you will get farther on costs than on benefits in most cases with which I am familiar.

The notion that sensible risk-benefit, cost-benefit, whatever one wants to call it, assessment—as distinct from analysis—makes sense in an open forum where all the information is available to the public, where there is adequate, effective—and that means funded—public interest participation makes a lot of senses. To require that a regulation show that identified benefits exceed identified costs is absurd. It is a way of vetoing regulatory process. Incidentally, so would the opposite. To show that removing a regulation had to have more benefits than costs might prevent any change in regulation in that direction as well.

I would recommend to this committee a handful of things. That it require full openness, fully funded public interest participation, a complete review of the information system in and out of the market, and a great increase in the strength of the laws dealing with monopoly and competition.

Thank you.

[Testimony resumes on p. 445.]

[Dr. Ferguson's prepared statement follows:]

# Statement in Response to
# "The Trend of Government Regulation of Business"
(July 9, 1979)
by Murray L. Weidenbaum

by
Allen R. Ferguson
President, Public Interest Economics Center

Mr. Chairman, members of the Subcommittees, I appreciate your invitation to comment on Professor Weidenbaum's paper "The Trend of Government Regulation of Business." It is particularly gratifying to me to appear today on this subject because I have devoted a large portion of my professional career to problems of regulation, and the Public Interest Economics Center has performed research in many areas of regulation and has devoted much of its educational, governmental liaison and clearinghouse activities to questions of regulation and deregulation.

I am Allen R. Ferguson, president of the Public Interest Economics Center located at 1714 Massachusetts Avenue, N.W., Washington, D. C. For over 25 years my professional life has been concerned predominantly with policy economics. I received my Ph.D. in economics from Harvard University and later was a member of the faculty of the University of Virginia, in the Department of Economics. My prior experience has also included several years at the RAND Corporation doing economic analysis for the United States Air Force, serving as Director of Research at the Transportation Center at Northwestern University, serving as Coordinator for International Aviation in the Department of State and Director of Policy Research at Planning Research Corporation.

The Public Interest Economics Center (PIE-C) is a not-for-profit corporation whose major purpose is to facilitate the systematic involvement of professional economists in public policy activities to advance the public interest. Whereas it is obvious that there is no unanimity about where the public interest lies, the purpose of the legislative program of PIE-C is to provide legislators with the views of competent economists who have no financial interest in the outcome of the issue at hand but who, through experience or study, are well versed in the subject. We define the public interest as being served by actions that increase the efficiency with which the economy performs, that reduce the inequality in the distribution of income, wealth and power, that increase the influence and freedom of choice of consumers and individual citizens or that provide for adequately weighing social costs and benefits in public and private policy decisions.

In the body of my statement I shall concentrate on three aspects of Professor Weidenbaum's paper: the relevance of the general and specific data and analysis it contains; the validity or, perhaps, the interpretation of that information, and omissions from the paper.

Relevance:

Before plunging into a detailed critique of a paper, or before even deciding to take it seriously, one should spend a moment on the question of whether it is relevant, or to what it might be relevant. Clearly the trend in governmental regulation is relevant to the broad interests of these Subcommittees in evaluating the overall performance of regulatory agencies. But the title of the paper is somewhat misleading. What Professor Weidenbaum discusses is the trend in the costs of governmental regulation, at most half of the relevant trend. There is no discussion of the trend in the gains from regulation. Further, there is little discussion of "old" regulation. The emphasis is entirely on quality of life regulation: environmental, health and safety, anti-discrimination. Thus he deals with far less than half the relevant trend.

His selection of quality-of-life regulation is justified on the grounds that it accounts for some eighty percent of the direct cost to government of regulation and on the grounds that it is the most rapidly growing portion of regulation. Certainly, on these grounds, it is a segment worthy of serious evaluation, but it is this sector where regulation may be doing far more good than harm, yet Professor Weidenbaum's comments are essentially all negative. There is another segment of regulation where there is a large body of analysis -- and virtual consensus among independent students of regulation -- that regulation does more harm than good, namely, the cartel regulation of the industry-specific regulators, the Federal Maritime Commission, ICC regulation of motor carriers, for example. Unlike quality of life regulation, this is a sector replete with instances where all the public and private costs of regulation could be saved at virtually no loss of benefits to the public at large. That is an area where analysis is at least as relevant as in the area of "new" regulation. In one area we "know" that regulation is contrary to the public interest; this is the area Professor Weidenbaum ignores. In another we know regulation is doing some good; this is the one he attacks.

Within his restricted framework, Weidenbaum's paper begins with a review of the growth of aggregate federal regulation as measured by its public and private cost. What is the relevance of this? The impression I get from the paper is that a showing of great growth is supposed to constitute a showing of excessive growth. That, of course, is not valid. Further, the data presented are unbalanced and potentially misleading. What is the relevance of the observation (page 4) that the number of regulatory agencies grew from 12 to 56 between 1930 and today? That sounds like tremendous growth. It is, in fact, about 3 percent per year compounded annually. That doesn't sound so tremendous. I do not want to play impressionistic games with numbers, but I point out that the impression a reader gets may vary greatly with the form in which such data are presented.

There is a much more important point here. No particular rate of growth is, on its face, either excessive or, for that matter, adequate. There is no relevance in showing a figure on growth in investment in anything without showing something about need. Consider that in 1930 the nation was still largely rural, transportation was fueled largely with coal, there was neither social security, television, a cure for polio, nor an aerospace industry. Now, a single technical or managerial error can threaten lives throughout half of Pennsylvania and soon could lead to the theft of weapons-grade nuclear material. How can one say that a five fold -- or a 3 percent per year -- growth in anything has been excessive over half a century that has seen the changes of the past fifty years?

Later Weidenbaum shows a six-fold increase in direct federal costs of regulation over the past decade (page 6). That, indeed, sounds impressive. But it is no more relevant than the previous statistic. Presenting to these Subcommittees, such a growth statistic implies that it means something, and the thrust of Professor Weidenbaum's paper is that it means that growth in regulation is excessive. In reality, by themselves, this number means nothing. The figure could as well mean that regulation has grown too little as too much. The idea that regulation has grown too much in the 1970s implies that the amount of regulation was about right in the sixties. That seems patently absurd. Remember the situation in the late sixties. Lake Erie was declared to be dead. Boaters in the Potomac were advised to be careful not to get splashed! Discrimination in jobs, schools, in the credit market was rampant. Fuel prices were still declining in real terms -- and on and on. The quality-of-life regulation in existence in the 1960's was in my judgement inadequate for its time and clearly grossly inadequate for the present. So, again, the numbers are irrelevant.

Further, aggregate cost figures do not mean much. The question obviously is not how large are the costs of regulation but how large are they relative to what society gets from those resource commitments. To form any judgement about whether costs are adequate or excessive requires forming judgements about gains. Defense costs are enormous, so are social security outlays and expenditures on education. What follows from those facts? -- Nothing. And nothing follows from the fact that costs of regulation are either high or growing.

There is another major consideration here. Even if it were possible to measure all the benefits of regulation in dollar terms and to compare them with dollar costs (both properly measured and so on) and even if that analysis showed that costs exceeded benefits that, even that, would not show that there was an excess of regulation. The appropriate conclusion would be ambiguous. The conclusion could mean either that there was too much regulation or that regulation was inefficient. Regulation could be inefficient in that the emphasis in regulatory programs was inappropriate -- relatively minor hazards, say, were being guarded against while major ones were ignored -- or that, within individual areas of regulation, regulations were so designed or so enforced as to be ineffective or to cost more than the value of the protections they provided. So, cost data alone is irrelevant and aggregate cost data combined with aggregate benefit data would be ambiguous.

There is another deficiency in the aggregate approach. What is relevant is pointed out on page 19 of the Weidenbaum paper: " . . . regulation should be carried out to the point where the incremental costs equal the incremental benefits, and no further." This is what is, in the end, the relevance of cost data. In saying this I do not suggest that cost-benefit analysis is a panacea for regulatory ills -- I am speaking here only of relevance.

I cannot resist pointing out in passing that the extrapolation to 1979 from 1976 data on the basis of the 20:1 ratio is at best heroic, as Professor Weidenbaum admits (page 15).

A final point on relevance: Properly estimated, properly used, presented in a balanced fashion, cost data are relevant. The problem here is that the paper suggests that from the cost data presented, and from asides about the implicit virtue of private management in the unfettered market, the inference can be drawn that regulation is excessive. That is false.

Validity and Interpretation:

The first issue of interpretation or validity is very broad. Although there is little explicit on the point there is in the paper pervasive suggestion that, in the absence of some proof that it is right, there is something wrong with governmental regulation. " . . . a very considerable public presence is evident in what historically have been private affairs." (page 2) Much of the other introductory material suggests this. Finally, on page nineteen, the issue is put into context the " . . . government should deal with market failures . . . ." This reflects a strong theme in the analysis of government regulation. Its theoretical foundation in economics is based on the analytically useful assumption that in the absence of governmental involvement markets would be free and competitive and consumers would have the information they need to make choices in their own interests.

In the United States (and probably everywhere else) markets in the absence of governmental involvement would not be free nor would they be competitive nor would consumers be supplied with the information they need to make decisions well. To validate these assertions would carry this commentary far afield; so let me, instead, merely make some more undocumented assertions -- assertions whose validity is, I think, largely obvious. Much of American industry is characterized by small numbers of large sellers (or in agriculture buyers) who have some degree of control over price in the markets in which they sell and buy. In economists' terms many major markets are characterized not by competition but by oligopoly. Second, many important goods and services used in industry are not fully paid for by the user — notably environmental amenities, but also publicly provided infrastructure, for example. Some users may pay more than their share, for example, all firms contribute to the subsidization of inland waterways. Third, information provided consumers is not objective, accurate data from unbiased sources; it, instead, is largely information and misinformation provided by producers in the producers' own interest. Further, in the past two decades, the economy has seen a proliferation of conglomerates and the disappearance of hundreds, perhaps thousands, of moderately sized firms; so that individual managements are involved in many markets simultaneously.

In such a situation there is no, absolutely no, economic basis for inferring that economic efficiency is achieved and public welfare maximized, by the play of unregulated market forces.

A second question of validity arises in the discussion of the private costs of regulation (page 9). Here Professor Weidenbaum alludes to higher prices under regulation as "hidden taxes." They are not. In principle, that is with efficient regulation, increases in prices associated with regulation do not impose a hidden tax. What they do is remove a hidden subsidy. For decades (or centuries) many industries have been polluting rivers, discriminating against women and minorities, contaminating the air, destroying beaches and views of the mountains, wasting trees, consuming irreplaceable resources and jeopardizing health -- and doing all these things at bargain prices, frequently zero. Society as a whole has borne these costs and in doing so has provided a hidden subsidy to the polluting, exploiting or hazardous industries and to their customers. Economic reasoning and simple justice clearly call for eliminating those subsidies through what economists call internalizing those costs. Those subsidies pose a serious concern. By reducing the price of environmentally destructive, hazardous or otherwise undesirable kinds of goods, they increase the amount of those goods demanded and, hence, the resources commited to their production and the amount of damage they produce. Removing those subsidies will permit prices to give better signals, even in our imperfect markets, inducing consumers to move away from products and services whose production has adverse effects outside the market.

The hidden tax argument is in principle fallacious.

Third, several pages of the paper are devoted to the costs imposed by regulation on car buyers. The analysis is suggestive, again, without the possibility of reaching any valid conclusion because, again, one can conclude nothing with only cost data. Further, the data leave a lot to be desired. I have not looked at the analysis underlying the table on page 11, but want to comment only on Table 2 itself. The largest single item shown is the catalytic converter apparently. The catalytic converter, however, was required in large part because of decisions made by managements in the American automobile industry. Converters are not required on foreign cars to anything like the extent they are on American-built cars. The management of the American automobile oligopoly apparently was simply technologically retarded.

Incidently, that backwardness costs American car owners about 10¢ per gallon for lead-free gasoline. Analysis of some of the other data in the table might similarly indicate that the increases in costs are not legitimately all laid at the door of regulators. For example, would there have been no improvement in seat belts, head restraints or hazardous fuel systems in the absence of governmental regulation?

There is apparently a methodological flaw in the table, as well. The table is assembled in a rather unorthodox way. One would usually seek estimates in a given year, say, 1978 of annualized costs of production in that year that could be associated with regulations then in effect. Instead, Table 2 merely sums for eleven years the costs reportedly incurred in individual years. There are at least two deficiencies in this.

First, any learning curve effects appear to be ignored. Second, regulations in one year frequently replaced and, hence, reduced or eliminated the costs of regulations introduced in earlier years. For example, successive changes in emission controls eliminated some of the costs of meeting earlier emission standards, the costs of the complete interlock system imposed in 1974 do not appear in 1978 cars and certainly the costs of removing them (charged to 1976) were not incurred in making 1978 cars.

As I said, I have not examined what lies behind the table, but I suppose that the data incorporated in the table came from the industry. Obviously, there is a possibility of bias -- specifically upward bias in the cost figures. There are, for example, clearly opportunities to incorporate the costs of changes that would have been made anyway as costs attributed here solely to regulation.

There is a second methodological problem. The costs shown pertain only to sticker costs. A better method of estimating the cost effects of regulation would be to examine the life-cycle costs of changes justifiably attributed to regulation as it affected the production, use and maintenance of a particular model year. During the period covered in the table, there have been important changes in operating and maintenance costs. For example, I am told* that the interval between normal replacement of spark plugs has doubled and the interval between oil changes has tripled and that these reductions in maintenance costs are attributed in part, at least, to regulatory changes. Such cost reductions, of course, offset some of the (properly computed) increase in purchase price. At the same time, there may be significant maintenance costs associated with the catylic converters; life-cycle costing would add these costs to annualized capital costs. But it is annualized life-cycle costs that are relevent.

In many respects I feel more comfortable with Professor Weidenbaum's. discussion of "induced effects," or would if he had entitled the section "Induced Costs." Some of the costs to which he alludes are real, and any advocate or critic of regulation must be aware of them both for determining the net value of regulatory programs and for improving on them. Again, the fact that programs have subtle, indirect costs fails entirely to lead to policy conclusions. The question is, once again, is the game worth the candle? More specifically, is each regulation worth what it costs? And, finally, where can regulatory practice be improved so that quality of life regulations will in fact generate enough gain at low enough cost to provide the improved amenities inherent in most quality-of-life programs without excessive expenditure of resources?

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* I am indebted to Clarence Ditlow of the Center for Automotive Safety for this information.

The logic of the argument that regulation depresses innovation is perfectly valid. But it seems quite possible that fuel economy regulation was required, or at least was one way of stimulating, the American automobile manufacturers to begin to catch up with the innovations made abroad long ago. It is possible that given the rigidities in some markets regulation might in other cases stimulate useful innovation.

The question of the impacts of regulation on concentration of economic power is potentially one of major concern. The economy is, in my opinion, already too highly concentrated to function efficiently in economic terms, but it does not follow that it is wise to reduce regulation that protects the public at large from such externalities as pollution or such affronts as discrimination. First, monopoly power is a problem that should be attacked head on. Conglomeration, multi-energy companies, disjoint financial complexes, highly concentrated markets in chemicals, foods, automobiles, steel, for example, are not likely to serve the national interest. Second, the possibilities of providing relief for small or new firms as a part of the regulatory process should be explored. Third, there is an empirical question of whether and, if so, to what extent regulation has forced the bankruptcy of a significant number of small firms that would have survived otherwise.

Finally, on induced costs: Professor Weidenbaum counts, as a cost, diversion of management to coping with regulatory problems. Clearly that is valid to a considerable extent. However, some of the diversion may not represent social cost, it depends on what the management would be doing if it were not coping with regulators. To the extent that they would be devoting their attention to making the market work less efficiently -- for example, devoting their talents to excessive styling or other forms of non-functional product differentiation, to persuasive advertising, to developing ways of reducing competition in their industries -- some of the diversion would constitute a social benefit. I suspect that such benefit would be small, but perhaps not negligible.

### Omissions:

There is potentially a very serious cost that may be induced by regulation: increased involvement of business in government decision making. As government seeks to regulate business activity more and more, the motive for business involvement, through political channels for example, in governmental decisions is certain to increase. Increased business pressure to determine the nature, scope and enforcement of regulations is not likely to serve the interests of the public well.

The more serious problem with Professor Weidenbaum's discussion of indirect effects is that it ignores potential indirect benefits. I have already alluded to the expectation that appropriate regulation would tend to direct demand and, hence, production away from goods and services that are particularly detrimental to the environment or have other adverse side effects.

There is a somewhat more subtle indirect benefit of much of regulation. It is potentially of great importance. Regulation can generate substantial savings in information cost or, alternatively, in protecting consumers from concealed consequences of uninformed purchases. Such benefits are well understood and very common in other areas. Building codes relieve consumers of some of the burden of being sure that construction of a new home is not grossly inadequate, for example. More generally, with the proliferation of consumer products with many characteristics that are not obvious, consumers must either devote a great deal of time and effort -- those who are competent to do so -- to trying to determine whether food is adequately safe, TV sets are likely to be less shocking than the late shows, car bumpers will do any good, not to mention whether the production of a particular good contaminates the atmosphere, involves discriminatory hiring practices or working conditions that the individual consumer would not elect to condone or support.

It is in reality impossible for consumers to be experts in all the fields necessary for making informed judgements in all purchases; it is similarly difficult and often impossible for them to acquire the information required, even if they had the competence to evaluate it properly.

To the extent that regulation provides assurance that conditions of production meet some standard of environmental, human and resource protection, that products do not involve what are considered to be excessive risks, consumers are saved the burden of gathering information that would be costly and sometimes impossible to obtain and are assured of some minimum standards of quality. To the extent that regulation is ineffective in meeting these goals there are opportunities to improve regulation rather than necessarily to abandon it, but the potential pay-off from these induced benefits justifies serious analysis.

There is a final omission in Professor Weidenbaum's paper : identification of areas where additional regulation is needed. Nor is it entirely unreasonable to expect that an advocate of a free market economy would see need for additional regulation in some areas. First, it is my judgement, as I have already suggested that there is need for additional anti-momopoly regulation. Second, the effectiveness of the free market is heavily dependent on what in theory economists refer to as "perfect knowledge." There is no more likelihood that we shall see perfect knowledge (or even

the more technocratic "perfect information" that some economists allude to) than that we shall see a perfect tax structure, but there are some gross deficiencies in market information that should be addressed. The question of whether First Amendment protections should be extended willy nilly to artificial persons as well as to people requires serious consideration. If it does, regulation -- perhaps through counter-advertising and suitable educational emphasis and open proceedings -- could be used to improve the working of markets through reducing the present biases in information which is provided largely through advertising in the suppliers' interest. Third, food safety regulation, as currently defined, is exceedingly narrow. It is concerned only with rather direct and, frequently, exceedingly low risk toxicological hazards. There is no authority of which I am aware for the federal government to intervene effectively in the marketing of foods which are widely believed to be excessive in the American diet, fats and sugar, for example. There are other areas where additional regulation appears to be called for, in the commodity markets, for example.**
But I intend no exhaustive list here, merely to make the point that this whole area was ignored by Professor Weidenbaum.

My final comment refers to Professor Weidenbaum's identification of his version of "the villain of the piece," namely, "a self-styled representative of the Public Interest.." (pp 18-19). These villains do two things according to the paper: "attain their benefits at the expense of the more diffused and larger body of consumers" and identify " . . . his or her threatening hoarde are -- according to page 2 -- environmental protection, job safety, equal opportunity, consumer product safety among others. Some of the others I presume are preservation of natural resources, considerate treatment of the handicapped, protection of health. Is it obvious that attaining these goals can be legitimately characterized as occuring " at the expense of the larger body of consumers?" Further, is placing a high value on these ends well thought of as "prejudice?" Is it obvious that they are not in fact important components of the national well-being? None of these conclusions is obvious to me.

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** Norman N. Jones, Jr., et al; "Competition and Efficiency in the Commodity Futures Market, Executive Summary," prepared for the Commodity Futures Trading Commission by the Public Interest Economics Center, May 1978.

Mr. **Gore**. Thank you, Dr. Ferguson. We will proceed now with 5-minute statements in rebuttal, and let me forewarn the panel that we will do strictly 5 minutes, because in 5 minutes we are going to have to leave to go over and vote on some Government regulations.

Dr. Weidenbaum, please.

Dr. **Weidenbaum**. Thank you, Mr. Chairman.

Everybody at this table supports health and safety regulation, and it is more than lipservice. In my standard textbook I devote an entire case to the benefits of cleaning up the Willamette River without one word about the cost; another case to affirmative action in dealing with job discrimination without a word about costs. By the way, I never attacked Dr. Ferguson for sponsoring an entire conference on measuring the benefits of regulation. I think that is very useful. But why the vehement attack by others on one economist who tries to add up the bill for regulations? I can only infer that the opponents of regulatory reform fear that the benefits of some regulations are less than the costs.

Finally, about the retained economists. Yes, I served in the Nixon administration. It was well known that I did not hesitate to stand up and argue with John Ehrlichman or even Richard Nixon. Under the circumstances, Mr. Chairman and members of the committee, I assure you no corporate official has ever dared, has ever tried to interfere with my academic freedom or that of any member of the staff of the Center for the Study of American Business, even on the many occasions where they strongly disagreed with our research and our statements.

Thank you.

Mr. **Gore**. Thank you. Perhaps we will have time to get in a statement from Mr. Green. Is your statement likely to run the full 5 minutes? Mr. Green, if you can try to finish in 5 minutes, we will go ahead and take your statement now, because when we adjourn we will have a quorum call and then a vote.

Mr. **Green**. I will speak about some of Mr. Weidenbaum's concerns and cost-benefit analysis. He seems apparently hurt over what he considers vituperation, as he calls me a liar and Ralph Nader and myself "villains" in his prepared statement. Well, Mr. Weidenbaum should know that Bureau of Labor Statistics officials have told Barry Felrice of NHTSA that he has misused BLS data by double counting. I hate to disappoint Professor Weidenbaum, but Dr. Miller in his statement and to me this morning agreed with me that BLS data had been misused by Mr. Weidenbaum. I assume that when Professor Weidenbaum checks with Barry Felrice, he will correct the record and apologize to me, since he is interested in truth, not vituperation.

Second, he is upset that we failed to acknowledge his understatement of compliance costs because he carried some compliance costs in 1976 at zero. For those who may missapprehend that point, today all his agencies have costs. DOE has attributed a cost at $3.2 billion or so. It is not carried at zero. First of all, the agencies he omitted have low compliance costs. He omitted FDA, but even based on his own data today FDA costs are about $400 million, its budget is about $300 million. Its compliance ratio is about 1:3—not 20:1, but about 1:3.

Much more importantly, the way Professor Weidenbaum gets to a multiplier of 20:1—which is the core of his study, because that is how he gets to $100-plus billion—is to include about $30 billion of paperwork costs, the bulk of which is IRS forms. IRS forms are not the kind of health, safety, or cartel regulation that debate has turned on.

Let me cite here a study by the Library of Congress by Julius Allen which criticized Professor Weidenbaum's study because "there are unresolved problems of double counting and inaccurate addition," because his multiplier is "misleading." This September 1978 analysis concludes his study has "enough questionable components to make the totals arrived at suspect and of doubtful validity."

This is the Library of Congress, not merely me, saying his study should not be respected.

Third, he is upset that I quoted him earlier but not now. I never quoted him in an article. I was the editor of that book, not the author. Someone else did. But when you have new facts, you gain new insights. When I saw your studies and rhetoric so critically attacking health-safety regulation before business audiences, and when I discovered that there were 5 business foundations or firms contributing $700,000 in 2 years to you, it did influence my respect for your proclaimed independence. It is not illegal nor perhaps unethical to accept that kind of contribution, but spare us your self-evaluation as a serious economists and myself as somehow a biased critic.

On the issue of cost-benefit analysis, I cannot improve on Dr. Ferguson's characterization that it is neutral in concept but biased in application. This Oversight and Investigations Subcommittee, previously CEQ, Governmental Affairs Committee, and the Library of Congress have said that based on the current state of the art, cost-benefit analysis cannot now accurately measure benefits and should not be done explicitly. Business Week, not a consumer advocate's publication, has said, "No cost-benefit study will arrive at a result on which all experts agree, because it is difficult to measure benefits to the public of government programs."

To conclude, regulators should articulate the assumed benefits and the projected adverse consequences of a proposed rule or regulation, but they should not burn incense to cost-benefit analysis. Because business controls the cost data, it is exaggerated. Because no one has done adequate benefit studies, and often it is impossible to do, it understates the benefits.

This is a point on which Professor Weidenbaum occasionally concurs. In one of his documents circulated to the committee he said, "Reasonable precise quantification of benefits and costs is not always possible."

He nevertheless goes on to urge the adoption of a law that says unless you can prove that the benefits of a rule exceed the costs by $1 or more, you do not implement that rule. To require that, given the current gross imperfection of cost-benefit analysis today, not conceptually but in operation, is to urge the gross cutback of the FDA and OSHA and many of the other health and safety programs.

Thank you, Mr. Chairman.

Mr. GORE. Thank you very much. When we return we will have comments from Dr. Miller. The subcommittee will stand adjourned for approximately 20 minutes.

[Brief recess.]

Mr. LELAND [presiding]. The committee will come back to order. I understand that we have two statements to be made. The committee will have to leave in just a few minutes for another vote So we will try to expedite our time.

Dr. Miller?

Dr. MILLER. Yes, Mr. Chairman.

I guess I would like to respond on a few points.

One thing that bothers me about many of the justifications or, let's say, of the polemicist writings about the need for regulation and the criticism of those who advocate the use of benefit-cost analysis is what they identify are all the terrible things that do happen, and they are in many cases terrible.

They repeat them so often there is a propensity then to jump to the conclusion that regulation will avoid those costs.

As I said earlier, all institutions are imperfect. Even with the best regulation we have, we sometimes make only a dent into those.

For example, if you cite all the cases of cancer regulation it is not likely to make nearly as significant an impact on cancer as a simple law that says it is a capital offense to be seen smoking a cigarette.

I am not advocating that view, but I am just making the point that regulation will not solve all the potential benefits of a reduction of exposure to disease.

Mr. Green mentioned the polling data. I did look at the polling data. It is very confused. You get a very different response depending on what group you approach and you ask the kind of questions you ask.

The threads going into the polling data that I saw are that first people are concerned about certain types of risks, health and safety problems, and they expect the Government to do something about them.

On the other hand, they realize the regulatory agencies are not giving them very much for their money, and a feeling of really looking for something and that the Government agencies are not able to supply it.

Dr. Ferguson mentioned there is a widespread neglect of looking at the so-called cartel regulation. I can't speak for Professor Weidenbaum, but I have written a book and many articles on airline regulation and also have been very active in the trucking area.

I am sure if you call the people at the American Trucking Association they will be able to identify me as being on one side of the issue.

The Library of Congress study that was quoted by Mr. Green, my associate, Mr. Jeff Eisenock mentions to me that actually the quotation was perhaps taken just a bit out of context.

I wonder if while I am talking about something else Mr. Green would give me a copy. It looked like he was reading from it. I would like to check that out.

There is a note about the bias in industry data. There are sources of bias in industry data. When I was on the Council on Wage and Price Stability that is one of the points we often made in our filings.

On the other hand, we sometimes tend to underestimate costs. I want to emphasize that if industry is a biased source of information, surely Government agencies are. My experience with Government agencies is that they have no less incentive to misrepresent information be it on benefits or costs, in whatever direction suits their purpose.

On Professor Weidenbaum's error, I regret that this is one of the things I wrote down that I wasn't all that sure about. As I recollect, in my piece that I said, Mr. Green and Mr. Waitsman identified an error, and I said their point is well taken.

The question revolves around whether a cost was first added and then appropriately subtracted out. Professor Weidenbaum assures me that that error was not made. But let's not lose the perspective in quibbling over whether that was an error or not.

It is a drop in the bucket. I mean, a few molecules in the bucket perhaps, one way or another. The issues are vastly greater than just that.

Let me say this. I have never and I expect never to write a book or an article or do any piece of analysis that sometime later some legitimate criticism of it could not be made.

The question is, how often and how frequent are those criticisms? That is one gauge of the quality of work.

I also, like Professor Weidenbaum, have called for legislation that would require agencies to analyze the benefits and costs, and to make a determination that the benefits exceed the costs under my broad, expansive definition of benefit-cost analysis, and that this be subject to judicial review.

Finally, let me say something. I really hate to get involved in this rhetoric issue. Mr. Green and I were in Chicago last week discussing benefit-cost analyses on a panel discussion, and he made the charge that if Professor Weidenbaum's studies and his work didn't comport with the views of the industry generally, or whatever his supporters were, that his $700,000 center would dry up.

Mr. Green had mentioned in his discussion that his center was a mere $200,000 center. I venture to say that if somehow Mr. Green's study of the benfits or assessment of the benefits of safety, health enforcement that I reed didn't come out with the conclusions that it did, that his $200,000 budget would dry up.

I don't know the sources of his funding, but I would bet that. The question, though, is who funds or who doesn't fund the sources does not go to the question of the integrity and the quality of the work. That has to be judged independently.

Let's focus on that and not on the question of people's motives or possible bias in their work.

Thank you.

Mr. GORE [presiding]. Thank you very much.

Dr. Ferguson?

Dr. FERGUSON. Thank you, Mr. Chairman.

I will touch on only three or four things.

Jim, I would certainly never accuse you of not being concerned about the problems of cartel regulation. I know Murray is, too.

When I alluded to the concentration now on health and other social regulation, I am talking more about the political process, the administration and the Congress now seem to be focusing on the area where we know there are some benefits, and away from the area where we know there are virtually no benefits.

Jim and I have been on panels where with our different identifications as to political bent, we have come out to exactly the same substantive position on cartel regulation.

I am interested that your notion for how to solve cancer is with an extaordinary regulation of cigarettes.

Now, I do want to clear up one thing. I said that in practice cost-benefit analysis is in fact biased. I want to emphasize that it need not be biased, but that as it is now practiced, it is.

It can never be precise. It can never even be reasonably accurate. It can be a general guide, narrowing down the areas of uncertainty for decisionmakers. But it cannot be those things as it is currently practiced.

I agree entirely with Jim Miller that neither the Government agency involved nor the industry involved can be relied upon for unbiased information. Nor can public interest groups, which he didn't say, and I will say it.

Some public interest groups are so committed to their particular interests that they do make argumentative presentations. Nevertheless, it is essential that there be a countervailing force vis-a-vis the industry which has the advantages of funds and informational resources.

Second, not all public interest organizations are equally lacking in balance and perspective. There are mechanisms by which it would be possible to provide for professionally qualified public interest representation.

In this connection, one reason why we in the public interest frequently come forward with cryptic argumentative positions is simply that we do not have the resources to do the careful analytic work. Unless those resources are provided, that will not be done.

Now, this is partly in rebuttal to a criticism that Jim handed me in writing saying, "I notice the sales pitch at the end." I don't know how I can simultaneously say that there should be funding either by industry or Government for public participation without its sounding like a sales pitch.

I would be perfectly willing to disqualify our organization from participating if that were appropriate.

I do want to emphasize that there is no way of getting unbiased cost-benefit analysis without openness and effective nonindustry, nonagency participation at high level of professional competence in the regulatory process.

Thank you very much.

Mr. GORE. Thank you very much.

Let me ask a couple of questions first of Dr. Weidenbaum because I believe you have got to leave us for a speech on the Senate side, and then I think I can come back and continue the discussion.

Dr. WEIDENBAUM. Yes, sir.

**Mr. Gore.** On page 16 of your testimony, you refer to industrial concentration, and come to the conclusion that it increases as small businesses find that the burden of regulation is too great. Others have come to that conclusion as well.

Your statement implies that you would prefer competition to regulation. It seems to me that in order to insure competition, we must make sure that consumers have adequate information to make informed decisions, and that our laws and regulations on antitrust violations are vigorously enforced.

Yet in your calculus of the direct costs of regulation, you include the dollars spent on the antitrust efforts of the Justice Department and the Federal Trade Commission. That seems to be a contradiction to me.

Would you care to comment on it?

**Dr. Weidenbaum.** Yes, Mr. Chairman.

As I point out in my statement, I have looked at one side of the equation, and that is what is the cost of the regulation—with the full knowledge, in fact with the most enthusiastic urging that the Congress weigh that cost against the corresponding benefit and determine where the balance lies.

I have urged that in the strongest way, saying I frankly do not know in advance of the analysis where the balance will lie. So I think it is very appropriate to carry the cost of, say, the Antitrust Division of the Department of Justice on the cost side, although all I have is the cost of operating the Antitrust Division.

I don't have any of the costs that they do impose on the private sector.

But on the benefit side would be the benefits in terms of lower prices to the consumer, to the extent that the efforts of the Justice Department are successful. I urge that kind of study, and very frankly it hasn't been done.

Until it is, I cannot tell you, I don't think anyone can honestly tell you where the balance lies. My gut feeling is the balance would lie in terms of the benefits exceeding the costs, but that is just a feel.

**Mr. Gore.** But the implication clearly of your analysis is that these costs are excessive and that the cumulative total should lead us to cut back, and perhaps we should. But it seems to me most inappropriate to include antitrust efforts which are designed to increase competition which in turn is your preferred alternative to regulations as part of the cumulative cost of Government regulation of business.

**Dr. Weidenbaum.** Mr. Chairman, I respectfully suggest that every regulatory agency generates some cost. We just cannot ignore it. If nothing else, Congress enacts a budget to support the regulatory agency.

**Mr. Gore.** It is an enforcement agency, not a regulatory agency. I mean, the Justice Department's Antitrust Division is not a regulatory agency.

**Dr. Weidenbaum.** By my definition of regulation——

**Mr. Gore.** What about contract law? Would you count the cost of contract law because it also determined permissible limits of business agreements?

**Dr. Weidenbaum.** No, sir.

Mr. Gore. Why not?

Dr. Weidenbaum. I have used as a basis for my estimate the notion that the Government's rulemaking authority over the private sector is regulation. Therefore, there is an awful lot of Government activity in the tax field, in the credit field, in the procurement field, activities that affect the private sector, that I do not include in my estimate.

But to get to the heart of the question, why the concern with the costs? Frankly, educational—that is my job—to educate the public as to the very substantial magnitude of resources devoted to regulation, to make sure that the taxpayer, the citizen is getting an adequate return.

Mr. Gore. Well, I think that is most appropriate. But your methodology is, of course, subject to scrutiny. It seems to me that that is a legitimate question.

If you include the enforcement costs of the Antitrust Division at Justice, why would you not also include the court costs to enforce contract law, which serves as a form of regulation by your definition?

Dr. Weidenbaum. I certainly would agree that I have underestimated the costs of regulation by ignoring that portion of the judiciary expenditures which is used to enforce the various regulatory health, safety, et cetera, regulatory agencies.

Yes, I readily admit that that, too, is an underestimate in my numbers, but again I had no basis for estimating it. My intent—it surely was my intent in every case—was to err on the side of the underestimation rather than overestimation.

As I point out in my papers, wherever there was a range of costs, I didn't take the midpoint, and I didn't take the high end of the range. I took the low end of the range.

Mr. Gore. And yet in referring to the burden of regulation, you also seem to concede the fact that as long as benefits exceed costs, then it matters not what the total cost of regulation is—if the benefits to the society exceed the costs, then the total cost of the regulation itself would not be very relevant, would it?

Dr. Weidenbaum. Precisely. In fact, I go on to say that the entire approach I am suggesting is not a panacea for smaller Government. You cannot tell in advance of the analysis whether doing benefit cost analysis for the whole gamut of regulation will get you more regulation or less regulation.

What it will do—and this is why economists get so enthusiastic about the prospect—it will get you more effective, more efficient regulation. The public will get more benefits at lower costs, hopefully, than at present. That is the whole idea.

Mr. Gore. Let me ask you a leading question. Do you think that a cost-benefit analysis should have been performed by the FAA before the DC-10 was grounded?

Dr. Weidenbaum. In a sense—not a formal benefit-cost analysis—in a sense, they did a benefit-cost analysis, from their statements. Quite clearly under those circumstances, they considered the cost to the airlines and to the public worth the benefits.

Mr. Gore. Should they have been prohibited from grounding it before they had performed a formal cost-benefit analysis?

Dr. Weidenbaum. There was no rulemaking involved, to my knowledge.

Mr. Gore. Well, but should they have been prohibited from grounding it?

Dr. Weidenbaum. No, sir.

Mr. Gore. John Kenneth Galbraith recently wrote—not one of your favorite economists, I am sure.

Dr. Weidenbaum. He is a good personal friend, I am pleased to say.

Mr. Gore. Not one of your favorite economists, though.

Dr. Weidenbaum. Well, that tells you something about economists—even though we publicly differ, in a very civilized way, so that we are personal friends.

Mr. Gore. I have no problem at all understanding that. He wrote that the reason that outspoken critics of regulation did not raise the hue and cry when the DC-10 was grounded was because these economists tend to ride airplanes but don't breath cotton dust and that the perspective was skewed for that reason.

Is that a pejorative paragraph by Professor Galbraith?

Dr. Weidenbaum. I think you have well characterized the writings of one of America's——

Mr. Gore. I didn't characterize it. I asked if you would.

Dr. Weidenbaum. I think that is a very accurate characterization of one of America's leading humorists.

Mr. Gore. Well, now, let me ask you about one of your characterizations.

You criticized in your analysis environmentalists, consumer groups, civil rights organizations, et cetera, as "self-styled representatives of the public interest who have succeeded so frequently in identifying their personal prejudices with national well being."

You contrast such organizations with business firms who "perform the traditional middleman function and serve the unappreciated and involuntary role of proxy for the overall consumer interest."

Do you really think that business firms serve as a proxy for the overall consumer interest, or the overall public interest? I mean, back in 1902, there was a fellow named George Baer, president of the Reading Railroad, who said during the coal miners strike of that year, and I quote:

> The rights and interests of the laboring man will be protected and cared for, not by the labor agitators, but by the Christian men to whom God in his infinite wisdom has given the control of the appropriate interests of this country.

Dr. Weidenbaum. I always respect statements from members of other faiths, but I would rather not comment on them directly. Mr. Chairman, what I had in mind was the fact that General Motors, to my knowledge, spends millions of dollars a year to take market surveys, to find out what are consumer desires.

I have never known of a self-styled public interest group making any serious effort to find out what the public wants. I don't know how many polls they commission. Perhaps they are so smart that they know what is in the public interest.

But I tell you, from my own many years in Government, I am always deeply offended by anyone who contends that they represent the public interest. I have always been struck by the fact that good public policy only arises when you try to balance a variety of bona fide interests.

Surely what I had in mind is that business is the quintessent middleman. The higher costs that they absorb from Government regulation they do have to pass on to the consumer. So that in that way they are the unwitting representative of the consumer interest.

But make no mistake—I am as suspicious of the overestimate in business of the costs and adverse impacts of regulation as I am of the overestimates in Government of the benefits of Government regulation, which is precisely why I have always urged an independent congressional organization, like the General Accounting Office, which doesn't have a stake in the matter, to set the ground rules.

Otherwise, there is just a very standard human tendency to overestimate if you are in the Government the good—and I speak as a former civil servant—overestimate the good that you do, and if you are in the private sector, to overestimate the burdens on society.

I think you need to—for the public interest—guard against both. I wonder if I can be excused at this point.

Mr. **Gore**. Certainly. Let me just say that I think that was an excellent statement. You have made a real contribution. We look forward to having you come back from the Senate as quickly as you can because I think it is a useful discussion which I want to continue.

Let me direct a question to Mr. Green.

Mr. Green, will you concede that productivity has been negatively impacted by the tremendous growth in regulations by Government?

Mr. **Green**. No; I cannot.

Mr. **Gore**. Productivity measures are very difficult, and economists disagree on what the constituent causes of our productivity decline are. But many articulate economists have made the point persuasively and convincingly that one of the costs of Government regulation is the soaking up of a significant portion of investment capital in efforts to comply with regulations, and that that portion of investment capital which is so directed would otherwise have gone to product innovation, risk-taking, research and development, and other kinds of investments which traditionally have given rise to productivity in this country.

Mr. **Green**. Ed Dennison has done a very serious study trying to correlate regulation and productivity. To simplify, his conclusion was that regulation can reduce our potential productivity by a quarter today.

Mr. **Gore**. Well, more accurately stated, a quarter of the decline in national income per person employed between 1946 through 1970, as compared to 1970 through 1979, which comes out to a quarter of about a 3-percent turnaround.

Mr. **Green**. I think that is correct.

The problem I have, though, with that study is that he did not discount for the productivity increases as a result of regulation. For example, if you look at coal miners as only producing coal, and as a result of regulation they produce less coal, you can say the productivity is diminished.

But coal miners and coal companies produce coal, and they produce black lung disease. I would like to see a refined study estimating to what extent a healthier work force and public have reduced hospital costs, lowered hospital stays. Once you take that challenge into account, you can have a net productivity impact.

Two other examples in the auto area. NTSA's bumper standard costs money to implement and results in a cost to the consumer in terms of a higher price. NTSA, however, has estimated that the net impact of a 5-mile-per-hour bumper standard is a $110 saving to consumers over the life of the car—because you spend more for a better bumper initially and you more than recoup it in the life of the car in lower repair costs.

The fuel economy standard costs $400 in terms of capital costs for 1985 cars. Over the life of 1985 cars, though, there is a $1,000 gross benefit, a $600 net benefit. So you have to balance both sides of the equation.

I found that the Dennison study did not adequately do that, though it made some advances in productivity analysis that are useful.

Mr. GORE. Let me apologize to our panel. We are going to have to adjourn for a moment.

[Brief recess.]

Mr. GORE. The subcommittee will come back to order. I will recognize at this time my colleague, Mr. Lent.

Mr. LENT. Thank you, Mr. Chairman.

Dr. Ferguson, you have critiqued Dr. Weidenbaum's paper today, pointed out some of what you feel are the shortcomings in it. I wanted to ask you, as a scholar and as a professional economist, whether you have formed an opinion of the Nader report "Business War on the Law"?

Dr. FERGUSON. No; I have not. I have not read it.

Mr. LENT. You have not had an opportunity to read it. In your prepared statement today you apply several tests to Professor Weidenbaum's study. Test of relevance, validity, and omission were three of those that were mentioned.

Would you be willing to apply the same tests to the Nader study?

Dr. FERGUSON. Yes, certainly. May I add one thing. That list of criteria is very brief. Those were just the things I wanted to focus on in the time I had on the Weidenbaum study. But certainly those are relevant criteria for evaluating any such work.

Mr. LENT. So you have not had an opportunity, then, to read the Nader report?

Dr. FERGUSON. That is right.

Mr. LENT. In your view, what is the value or the role of cost-benefit analysis as a tool in regulatory decisionmaking?

Dr. FERGUSON. When you were not in the room I mentioned that I might sound rather pollyanish, but both Dr. Weidenbaum and Mr. Green are right—cost-benefit analysis is neutral and it is biased. It is neutral in concept. It is biased in application the way it is currently applied. But it need not be.

I think that I would use the phrase benefit-cost assessment rather than analysis. I would include in that all of the benefit-cost analysis, cost-effective analysis, risk benefit analysis and so on, and say that properly done a form of cost-benefit analysis can contribute substantially to good regulatory practice.

But "being done properly" is a little innocuous phrase that encompasses a great deal, including an assurance of availability of information to the public and to the regulators, assuring that the proceeding, however formal or informal, is effectively balanced between industrial and what I would call public interest.

I would define that to include competent, disinterested participation, by consumers and a number of other sectors.

Mr. LENT. Is it fair to say, then, that you are pro-cost benefit analysis? You don't take the position that the Nader study does?

Dr. FERGUSON. I wouldn't want to be categorized because I think that if important institutional changes are made then cost-benefit assessment can play a useful role. I would add that the comparison of aggregate costs to aggregate benefits really tells us nothing. The comparison has to be done on a program-by-program basis and regulation-by-regulation basis.

Mr. LENT. Well, let me ask you this. During your prior experience with the Rand Corp. doing economic analysis for the U.S. Air Force—I understand you were involved in this—did you utilize cost effectiveness or cost-benefit analysis as one of your tools?

Dr. FERGUSON. Not in any—no. I could modify that some. But the short answer is no. We did undertake in some areas fairly detailed economic analysis which by some extension could be considered a form of cost-effectiveness analysis.

Mr. LENT. Now, Mr. Green, your statement appears—and the study that you released at the last hearing of this committee—to be quite opposed to cost-benefit analysis and seems to be very defensive of the use of regulations.

If a regulation is good, why are you not willing to subject that regulation to (a) the test of cost-benefit analysis; (b) the test of a sunset law; (c) the test of a possible congressional or legislative veto?

Why do you oppose that? Don't you feel that the public has a right to know and that the legislative body has a right to evaluate necessary regulations?

Mr. GREEN. As I indicated, it is useful, if not necessary, for regulators to consider the best estimates of costs and benefits before promulgating a rule. But to require a mathematical computation before issuing a rule is inadvisable.

Dr. Miller in his critique of our report, which we have not yet discussed, said that ideally cost-benefit analysis could weigh the reduction in anxiety—anxiety is his word—when the public is assured, for example, that drugs are probably pretty safe and cars are pretty safe. He said that cost-benefit analysis should be able to measure the value of redistribution of costs and benefits.

Workers' health may go up, shareholders' dividends may go down, that is an effect of regulation, you should measure that. My point is that these things are not measurable. They are value judgments.

One could say that before promulgating the first amendment or a NATO budget, the founding fathers and the military have to prove that they are cost effective. The answer from the founding fathers would be, "It is our judgment that free speech is best, we cannot prove it," and the NATO people would say, "We need 900 tanks. We cannot prove that it is better than 800, but we want to be safe."

It is finally most inappropriate when you are dealing with long gestating diseases. The well-known benzene case now before the Supreme Court represents this.

If the Court or Congress forces OSHA to prove that its benzene standard results in loss of a certain number of lives, they cannot. They cannot today tell you the effect in 20 years of benzene.

I don't have to have to lecture the chairman of this committee today about the long-term costs of toxic dump sites around this country. He has broken ground on that issue.

If you had asked the people in upstate New York two decades ago what are the costs of toxic dumping in the Niagara area, they would have said minimal or nothing. Today we know the costs are immense.

Mr. LENT. Well, I have a problem understanding why you in your statement at page 3, you say that these ideas are constitutionally and/or administratively defective.

Then you enumerate the legislative veto, which so far as I know has never been declared constitutionally defective. You oppose sunset laws. You oppose cost-benefit analysis.

Now, my point is I think the public has a right to know. I think that Members of Congress in trying to make the determination how to allocate limited resources and funds ought to have the benefit of this tool.

Yet, you would preclude the Congress from having the tool of cost-benefit analysis. You would object to Dr. Miller's point that it is useful to bring an administrator before a Congress or a hearing body and say do you know what you are doing, question mark, which basically is cost-benefit analysis.

Why should the public and the Members of Congress who represent that public have that as a tool?

Mr. GREEN. A conversation about legislative veto and sunset would be worthy of many hearings. I can submit articles we have written about them, Congressman Lent.

On legislative veto, every President and every Attorney General since Franklin Delano Roosevelt have said it was unconstitutional. The Supreme Court has never ruled one way or the other on the matter.

On sunset, we are anxious that a procedure which allows one House but not the other, and not the President, to abolish a regulatory agency is a defective process.

As for cost benefit, I agree with your last statement, that regulators should be hauled before oversight committees, especially one like Oversight and Investigations, to defend why they have promulgated a regulation and require them to talk about the intended benefits and the projected costs.

I oppose what Professor Weidenbaum and Senator Dole are about to introduce, an amendment to prohibit a rule or regulation from going forward unless the regulator proves numerically that the benefits exceed the costs.

I would ask Dr. Miller—not to be contentious, but because I am unaware of his answer—would you support a law that required the regulators to prove by numbers that the benefits exceeded the costs by a dollar or greater before the rule or regulation went into effect?

Mr. **Lent**. I assume that is a rhetorical question. We will get to it a little later, but not on my time.

Now, on page 21, Mr. Green, of your statement you adopt the definition of benefit-cost analysis, "If the monetary gains expected from a project are less than the costs of undertaking it, that project fails a cost-benefit test and should be dropped."

Could you explain why you adopted this rather narrow definition of cost-benefit analysis for discussion purposes in your statement? Don't you think a broader statement, broader than just monetary terms, would have been more appropriate for contemporary analysis?

Mr. **Green**. We cited this as the classic definition of cost-benefit analysis. Perhaps it could be improved, Mr. Lent. By monetary gains we meant to imply, as economists do, that many esthetic values of life can be reduced to dollar terms.

I think many of them cannot, but according to the classic definition it is assumed that they can be.

Mr. **Lent**. Well, now, Dr. Miller, in his statement, discusses the fact that in your discussion of the actual inflationary impact of regulation and its policy relevance, you neglect to point out that a given inflationary or deflationary impact brought about by regulation is much more significant than the same impact brought about by manipulation of aggregate demand.

Do you agree with Dr. Miller's premise that a given inflationary or deflationary impact brought about by regulation is much more significant than the same impact brought about by manipulation of aggregate demand? That is a big question.

Mr. **Green**. It is a big question, and a tough one. I did not understand Dr. Miller's point when I read his critique. I may or may not agree with it. I would be glad to submit something for the record, but I didn't appreciate the distinction that he was drawing.

Mr. **Lent**. OK. Well, why don't we hold the record open, then, and you can submit an answer to that question.

[The information requested was not available to the subcommittee at the time of printing.]

Mr. **Lent**. Mr. Chairman, I have no further questions for Mr. Green.

I did want to ask Dr. Miller, on page 6 of your statement you note that Federal agencies have been reluctant to perform analysis of the benefits of regulatory activities, or to provide a data base from which estimates can be easily generated.

Why do you think this has been the case?

Dr. **Miller**. Mr. Chairman, I am not sure. Perhaps it is because part of it is the difficulty of performing benefit estimates. Part of it is the suspicion the agencies might have that if they did try to quantify the benefits, the apparent benefits would be quite modest in comparison with any estimates of cost. I would single out for particular criticism the Occupational Health and Safety Administration. I have looked for example at several of their economic impact statements or inflation impact statements when I was director of the public sector monitoring the group at the Council on Wage and Price Stability, and they were boilerplate. The agency in essence gave contracts out for companies to do estimates of costs, but they reserved the right for them themselves to write the chapter on benefits, and they were boilerplate chapters which essentially I said (*a*) there are a lot of criticisms of trying to make estimates; (*b*) any benefit estimates we might do would not be considered because our interpretation of the law is one that we have to focus on, we have to meet the standards if they are feasible, and also sometimes questioning the integrity of people who make such estimates.

That is I think the reason that OSHA got itself in such difficulty in the benzine decision, in the benzine case, that they simply, their approach has been one to refuse to make such estimates, just neglecting to make such estimates.

What they do on occasion is point out the aggregate number of people exposed, and the problem of cancer, et cetera, but trying to do what estimates or trying to make whatever assumptions are necessary to make some estimate of the benefits is something that is anathema to OSHA.

Mr. LENT. On page 7 of your statement you describe a scenario involving a regulator netting out costs and benefits on a ledger, and naturally it would be simple to net out easily quantifiable costs and benefits, but not so for those less capable of quantification. So my question is, How much time and effort do you feel regulators should devote to netting out those costs and benefits which are not easily capable of quantification?

Dr. MILLER. Of course, the task fits the importance of the initiative. The dimensions of the task fit the importance of the initiative they are taking. I just cannot give a rough answer, I mean a precise answer. Obviously for a very important regulatory initiative, I would think that they would spend a very large amount of time looking at these imponderables, but if it is a rather routine thing that they would not do that much investigating.

Mr. LENT. Just to summarize then, in your opinion you feel that cost-benefit analysis has a definite value in the regulatory scheme as a tool as well as in regulatory decisionmaking. What weight do you believe should be given to the cost-benefit analysis in the decision making?

Dr. MILLER. I should think it should be overwhelming.

Mr. LENT. Overwhelming?

Dr. MILLER. Overwhelming. I think it really should guide the decisionmaking, keeping in mind that I am taking the expansive definition of the term benefit-cost analysis. Let me answer Mr. Green's question by saying yes, indeed, I do call for legislation that would require agencies to demonstrate on the basis of a record that the benefits of the proposal exceed the cost, and that whatever regulatory objective is meant to be met is met in a cost-effective way. And third, that this be subject to judicial review, this issue be subject to judicial review. That is precisely my reading of the bill that Senator Dole has, is about to introduce or has under consideration, and I responded to him that way in his request for my comments on his proposal.

Mr. Lent. I thank you, gentlemen.

I have no further questions, Mr. Chairman.

Mr. Gore. Thank you very much, Mr. Lent.

Dr. Miller, I must say that I agree with your call for a calmer tone in this debate. In that light, I would like to ask you for your assessment of Dr. Weidenbaum's work. Would you say that it suffers from some of the same, or is subject to some of the criticisms that you have leveled at the Nader group's report?

Dr. Miller. I have not taken the time to review Professor Weidenbaum's piece in the same depth that I have reviewed Mr. Green's and Mr. Waitzman's piece. If the committee had asked me to do that, I would have been glad to have done so.

Mr. Gore. But you are familiar with it?

Dr. Miller. I am familiar with it. The principal questions, issues I would raise would be how do you define regulation? I would say, for example, I would include antitrust enforcement. In fact, when I wrote a chapter or draft of a chapter that appeared in the Economic Report of the President in 1975, in the chapter on Government regulation we included, or I included antitrust enforcement in that, much to the chagrin of my friends at the Antitrust Division.

There are some questions of defining cost or whatever. The most important thing is that whatever the definition of cost is, it is clearly indicated, and also that it is clearly indicated that one is measuring, focusing on costs and not on benefits or the other way around. I think Professor Weidenbaum does that.

As I mentioned before, I doubt that there is anything that has ever been written by mortal man that could not be criticized. For that reason I have no doubt that if I were asked to do an evaluation or a critique of Professor Weidenbaum's piece, I would bring to you criticisms, but I would say this. I would be astounded if they were anything like as severe as the criticisms I have made of the report by Messrs. Green and Waitzman.

Mr. Gore. I guess I would be surprised if that turned out to be the case as well. Would you include in addition to the antitrust enforcement——

Dr. Miller. Could I just amplify that, because I am really focusing on the quality of analysis. My comments or my criticism would be on the quality of analysis, and I think if I have criticisms of Professor Weidenbaum's analysis, they would not be nearly as substantial as my criticisms of Mr. Green and Waitzman's study, so I would judge the objectivity and quality analysis at this point much higher.

Mr. Gore. Would you also include in addition to expenditures for antitrust enforcement expenditures by such agencies as the Drug Enforcement Administration?

Dr. Miller. Yes, not within the antitrust enforcement.

Mr. Gore. You would include that as a regulation?

Dr. Miller. Yes.

Mr. Gore. That would have an impact on productivity, would have an impact on the business community and should be included in a measure of the impact of regulation on business?

Dr. Miller. Yes.

Mr. Gore. Why would the Drug Enforcement Administration be included?

Dr. **MILLER**. As I understand it, its purpose is to generate sort of public sector benefits and it is a public agency that is restraining market forces in some way or guiding market forces, or however you would define it. If I understand what the Drug Enforcement Administration does, and that is——

Mr. **GORE**. It is certainly restraining market forces.

Dr. **MILLER**. Yes, but Congressman Gore, I have not spoken to the question of benefits. You asked me whether I would include the cost of that agency.

Mr. **GORE**. Yes.

Dr. **MILLER**. The impact of that agency is in an account to totaling up the cost of regulation. The answer is yes, but I also include the benefits of that agency as well if I were making a benefit-cost analysis of such activity.

Mr. **GORE**. Could you include the Library of Congress Copyright Office?

Dr. **MILLER**. Or the Copyright Office?

Mr. **GORE**. Yes.

Dr. **MILLER**. Not the Library of Congress. Probably not the Copyright Office.

Mr. **GORE**. Professor Weidenbaum does. What about the Federal Election Commission?

Dr. **MILLER**. Pardon? Yes.

Mr. **GORE**. You would include that?

Dr. **MILLER**. Yes.

Mr. **GORE**. What about the Patent Office, the Trademark Office?

Dr. **MILLER**. Probably not.

Mr. **GORE**. He does. What about the National Labor Relations Board?

Dr. **MILLER**. Yes. You know, again, people's definitions of what constitutes regulation don't vary much.

Mr. **GORE**. Yes. What about the Bureau of Alcohol, Tobacco, and Firearms?

Dr. **MILLER**. Yes.

Mr. **GORE**. They restrain a lot of market forces down in my district.

Dr. **MILLER**. For good or bad, Mr. Gore?

Mr. **GORE**. Well, it depends on your views of gasohol these days, and what impact that is going to have .

What about the Labor-Management Services Administration?

Dr. **MILLER**. I don't know what that is.

Mr. **GORE**. All of these things it can be argued are designed to either be neutral as to productivity, or actually increase business productivity. Yet all of these and more are included in Dr. Weidenbaum's calculations. You say that you don't address the benefit side of the equation. It comes back to my general question as to whether or not you believe Dr. Weidenbaum's study is subject to some of the same criticisms that you have leveled at the Nader report. In discussing the Nader report, you say that you have to begin by saying, "Is it meant to be a formal analysis or is it meant to be primarily argument." Then you point out that Mr. Green describes the report as an "attempt to demonstrate" certain propositions. Wouldn't you concede that Dr. Weidenbaum's analysis is similar?

**Dr. Miller.** You mean in terms of demonstrate?

**Mr. Gore.** In terms of its purpose, and thus in terms of its relevance.

**Dr. Miller.** You know after I wrote that I realized that if you went back and looked at some of the things I have written, I have probably used the word "demonstrate" in the introduction too, when I really was meaning, when I was really doing some rather objective analysis. The reason I mentioned that is that I just was not sure what it was meant to be, but to address your question on Professor Weidenbaum's piece, I don't see argument in his piece. He sets forth and states at the beginning that his is an attempt to compile an estimate of the costs of regulation, and that is what he does.

Now, he has been criticized, wisely, as having done work on the benefited side. You know there are people who are experts on the tax side of the Federal Government, and some people are experts on the expenditures side. I guess that that is about as neutral—I wouldn't be critical of someone who wrote a book about tax policy for not also considering the program expenditure side.

Let me give you my assessment of what the genesis of criticisms that have been leveled at Professor Weidenbaum's work are, and I have experience in this. So often it is not what you say but what people say about what you say, and then report, and I'll tell you an experience.

I was once on the Council on Wage and Price Stability. One thing we were trying to do was to find not only regulations with which we disgreed or thought the inflationary impact was too great, but regulations that were beneficial, that we would support, and we found one regulation where the proposal from the Food and Drug Administration was to require labeling of blood, whether it was paid or volunteer, and we wrote this piece, but we also asked the question since it was part of—it was in the Federal Register notice saying they were trying to implement the national blood policy, and the objective of which was to eliminate all paid blood.

It turns out that a very substantial portion of blood that is transfused is paid blood and I wrote a sentence in there something to the effect that surely there must exist situations where paid blood although it is marginally inferior in terms of hepatitis is better than no blood at all.

If you read the piece I think you will find it fairly innocuous. This book that is cited at the very end of my attachment to my prepared statement, but the report of what we had to say characterized us as people who were defending these blood centers who got winos off the street and so forth, and that is not what we said at all.

It is a dilemma. How do you do such analyses? How do you take on tasks that are important to do, to accomplish, and not have somebody misrepresenting them? I don't know. Maybe you can advise us, or some other people can advise us how we do it differently

**Mr. Gore.** I am sure all of us have had similar experience. Let me ask you, Dr. Ferguson, to respond to the same question which I earlier directed to Mr. Green, concerning the impact on productivity of the regulations.

Dr. **Ferguson**. I am sorry, I have forgotten the specifics of your question, Mr. Chairman.

Mr. **Gore**. Will you agree or disagree with the conclusion stated by Dr. Weidenbaum which essentially restates the work of Edward Dennison, that regulations as a whole have had significant impact on productivity in the United States to the tune of a quarter of potential average increase which we have historically experienced but which we no longer experience.

Dr. **Ferguson**. I couldn't give you an unambiguous answer to that. It is over a year since I read Dennison's piece. At the time I was impressed with his effort to pull everything together in one place, and also I felt that it had some shortcomings that I couldn't reproduce for you at the moment.

The question of why productivity in this country is declining, I think, is just much too complex for this kind of unit-dimensional analysis. I suspect that one could take many other policy areas and show that more than four of them had contributed 25 percent or more to the decline in productivity. That is my suspicion. I think this needs to be looked at broadly, so I am quite unimpressed with his numbers per se. That in a sense is the main thrust of my reply. The decline in productivity is a complex phenomena that cannot be done justice with this kind of treatment.

Now the more general question, Does regulation depress the rate of increase in productivity? And the answer is ambiguous. As productivity is usually measured, yes, there is no question it tends to depress the increase in productivity, but the typical measures of productivity leave out of account all of the things that most regulation is designed to do.

If we had a different kind of social accounting system that took into account things other than those bought and sold in the markets or produced by the Government, then the question of the effect of regulation on productivity might be answered in an entirely different way. The long and short of it is no, I don't accept Dennison's conclusion, although I think he did a nice job of trying to take a first pass at similar questions.

Mr. **Gore**. He has got a brandnew study just out——

Dr. **Ferguson**. He can write faster than I can read anyway.

Mr. **Gore** [continuing]. In which he concedes the degree of uncertainty in this field, and indeed attributes half of the potential increase which has disappeared to uncertain factors, but a substantial portion of that which can be quantified he ascribes to regulation.

Let me direct another question to Dr. Miller. You are familiar with the chemical industry, are you not?

Dr. **Miller**. Not that familiar, no.

Mr. **Gore**. Pardon me?

Dr. **Miller**. Not very familiar, no.

Mr. **Gore**. You served as a consultant to the chemical industry?

Dr. **Miller**. No, sir.

Mr. **Gore**. My information is mistaken. Let me ask you then more in hypothetical terms. You look at a situation like Love Canal, and you look at the estimated cost to industry of properly disposing of the waste years ago, and you see that estimate at about $4 million. Then you look at the $27 million which has already been spent in an effort to try to undo part of the damage. You look at the $3 billion in potential legal claims, and if you are like me, you come to the inescapable conclusion that the cost of regulating the disposal of those substances in the first instance would have been a fraction of the benefits to the country as a whole. Would you agree with that analysis?

Dr. **Miller**. Yes, without question. The thing that we have to keep in mind, though, is that hindsight is often better than foresight. Had we known in advance what was likely to happen, then we could have taken action that would have prevented this. Many times we just don't know that, and there are accidents that happen.

Mr. **Gore**. I just had 34 constituents receive letters from the State public health department, informing them that their drinking water was likely to cause serious health injury or death, if they continued to consume it. The pollution of the groundwater table in the area where they live was relatively recent.

We know that this year approximately 100 billion pounds of toxic chemical wastes will be dumped into the ground, and that 90 percent or more will be dumped improperly, that is not in compliance with any recognized standards to protect the environment.

Now, hindsight is better than foresight, but foresight is not impossible, and if you see that happening today, and if you see a 7-percent annual increase in the volumes poured irresponsibly into the ground in this country, doesn't that lead you to conclude that the kind of analysis now possible with regard to Love Canal should also be applied prospectively to the dumping by the chemical industry this year and next year and in the future?

Dr. **Miller**. Yes.

Mr. **Gore**. Now if one then did an analysis of the dollars and cents cost to the industry of complying with the regulations promulgated to insure proper disposal, trumpeted that figure from coast to coast, and offered it as an example of the Government's depressing effect on American business, would the contribution made by that effort be a good one?

Dr. **Miller**. Let's back up. You are assuming that the benefits greatly exceed the cost?

Mr. **Gore**. Pardon me?

Dr. **Miller**. You are assuming that the benefits of this greatly exceed the costs, in other words, that the present disposal means is improper, meaning that it will definitely lead in the future to costs being imposed much greater than the benefits of cleanup, of proper disposal today?

Mr. **Gore**. My point is that given the uncertainty, and the difficulty in measuring either the costs or the benefits, and a tip of the hat to Dr. Ferguson particularly, the benefits. I think it is self-evident in this not so hypothetical instance. It is far more difficult to measure the benefits of that regulation than it is to measure the costs. Would one proceed to implement those regulations in spite of that uncertainty? Would you so recommend?

Dr. **Miller**. No; I wouldn't. What I would try to do is to reduce the range of uncertainty to the minimum or within reason, and try to make an educated guesstimate or guess, or make an estimate of some kind as to what the benefits would be, and then proceed accordingly. It is a very complicated issue, but there are reasons. It depends on whether it is a type 1 error or type 2 error and what the distribution of the uncertainty looks like. There are lots of complicating factors but what I am saying is a good analysis would carry these out. What you shouldn't do is just to say because there may be a possibility of enormous costs being borne because we don't take an action, that we definitely have to take an action. We need to look at the probability of those adverse effects.

Mr. Gore. Before taking action?

Dr. Miller. Yes.

Mr. Gore. What about the DC-10 example? Would you also require formal cost-benefit analysis before grounding the DC-10?

Dr. Miller. Someone was done, an implicit one was done. I talked to the Administrator of the FAA, Mr. Langhorne Bond.

Mr. Gore. Implicit is different from supporting a law which would require a cost-benefit analysis before grounding the DC-10. Would you support such a law?

Dr. Miller. I would support not before grounding the DC-10.

Mr. Gore. Why not?

Dr. Miller. I would make exceptions.

Mr. Gore. Why not?

Dr. Miller. For one thing, I do not know the procedures that are always followed in getting a temporary restraining order and how fast, how quickly some of these things might be done. Let me just mention my dad is a captain of a 1011, one of the other wide-bodied jets, and this is a very important kind of issue to me. Like other economists, I ride on airplanes as well.

Mr. Gore. Yes.

Dr. Miller. But what happened there was the head of the FAA made a decision that either restrained by law or whatever discretion he had that the benefits to the public exceeded the cost to the public. Now you are asking me whether as an institutional matter I would place upon the head of the FAA the additional burden of making a long factfinding, of performing a long factfinding investigation issuing through standards following the Administrative Procedures Act, and giving people an opportunity to have a temporary restraining order from the court. The answer is "No." I would have some dispensation for that kind of emergency standard.

Mr. Gore. If 100 billion pounds of hazardous chemical wastes is being dumped each year into the ground, polluting the groundwater resource, and increasing at a rate of 7 percent each year, why, then, is that so different? Why, then, should we have a lengthy factfinding cost-benefit analysis in an area fraught with uncertainty, and a virtual impossibility of determining the true benefit before asking these companies to follow some regulations designed to require them to properly dispose of the waste? What is the difference between the two situations?

Dr. Miller. What I find, Congressman Gore, is in so many cases there do exist standards already. For example, I think Mr. Green or Mr. Waitzman wrong when they point out that OSHA has implemented only 21 standards, or infers that there are no standards for the other toxic substances, and that is incorrect. What we have is that there are waste disposal "regulations" by local governments, by State governments. There are also liability laws.

Mr. **Gore**. I beg to differ, Dr. Miller. I have conducted 13 hearings on this issue, and you will find that in most instances there are no State regulations on this matter, and that in many, many instances the States, in Tennessee, for example, it is a good example, it is very typical, the State is waiting for the Federal Government to issue its regulations, so that the State and Federal regulations will not be contradictory, which brings me back to my——

Dr. **Miller**. Could I finish there? Of course there are laibility laws.

Mr. **Gore**. There are liability laws with the DC–10's also. We could rely on the wrongful deaths statute.

Dr. **Miller**. That is true. That is a good point. What we do find in the case of toxic substance regulation and waste disposal is that the agencies are making, going through long procedures, to determine what the regulations should be. So we are not requiring them to do a benefit-cost analysis does not seem to me to be a burden that would greatly prolong the standard-setting process, so there is not significant cost in asking them to do that.

Mr. **Green**. Excuse me for interrupting. You do urge that it be judicially reviewable, however?

Dr. **Miller**. Yes.

Mr. **Green**. That would considerably add to the delay, given the way companies have the resource, to challenge regulations that they think are adverse to them.

Dr. **Miller**. Yes, but what I think would happen in that event is that not so many of these things, is that more things would be challenged, but the agencies would do a better job of regulating. Today companies challenge regulatory agencies for—Mark, you are the lawyer, what is it called? For lots of reasons, capricious and that sort of thing, so the question is how much more litigation would that involve. My judgment as an amateur lawyer obviously is not a lot.

Dr. **Weidenbaum**. Mr. Chairman, would it be useful if I explained what I had in mind when I made the recommendation?

Mr. **Gore**. Yes. The question was not really provoked by your recommendation, but for the record let me just read what you did say. It bemoaned the fact that the current estimates of the burden of regulation "do not yet include many costs associated with the hazardous waste section of the Resource Conservation and Recovery Act," et cetera, et cetera. Go ahead.

Dr. **Weidenbaum**. I strongly believe that prior to issuing a new standard, an agency like EPA should be required to do a benefit-cost analysis. However, I never suggested that that benefit-cost requirement be extended to individual enforcement actions to carry out that standard. That surely was not my intent, and I would urge the Congress not to make such a cumbersome benefit-cost requirement.

After all I view benefit-cost analysis, surely as I said on many occasions, not as a panacea, but as a useful guide to decisionmaking.

Mr. **Gore**. Mr. Miller, during the period of your Government service—correct me if I am wrong—you at one point forced OSHA to delay its coke oven regulations for 9 months in order to comply with the inflationary impact statement.

Now, my information is that coke oven workers have an instance of lung cancer 10 times that of others in that profession. This is all a balancing matter. First, am I correct in the statement?

Dr. Miller. No, sir, you are not. I cannot imagine my having anything like that kind of power.

Mr. Gore. You did not?

Dr. Miller. I did not. I did not delay the coke oven standards. Somebody may have assessed that that was the reason for the delay, the intervention of the Council on Wage and Price Stability. But to my knowledge that is incorrect.

Mr. Gore. What was your caveat there?

Dr. Miller. To my knowledge that statement is incorrect.

Mr. Gore. OK. Well, we will hold the record open for clarification.

Dr. Miller. I should mention when I came to the Council on Wage and Price Stability the council's intervention as indicating to OSHA that it wished to file as an ordinary vendor had already been made.

This conceivably was something that went on before I was there, for which I have no knowledge, but I personally was not responsible. But you had another question, sir, I would be happy to respond to.

Mr. Gore. Well, I still don't quite understand the differences between the DC–10 example and the constituents of mine who are having their water poisoned on a regular basis, and people in the rest of the United States who are facing imminent hazard.

Dr. Miller. The question goes to whether one should be—in the case of the DC–10 it was a decision that was made without a formal benefit–cost analysis.

Mr. Gore. That is correct.

Dr. Miller. And the other is——

Mr. Gore. Well, in the first instance you have said that you would not require a formal cost-benefit analysis because of the imminent possibility of harm. In the other instance, there is also an imminent possibility of harm. Yet you would require a formal cost-benefit analysis there.

Dr. Miller. Right. Well, the question of timeliness goes to the question of benefits and the costs. You can make a decision, for example, to ground a plane in 30 minutes. Planes when they land, they don't take off again.

You probably, even if you pass, the House and the Senate passed and the President signed a law that says the toughest regulation imaginable of toxic substances disposal, it would just mean that the companies would shut down, that they could not change overnight.

The point is that this is an industry where first, as I indicated earlier, regulations, if they are going to be promulgated, are going to take time to do. The question is whether there is additional time required by the benefit-cost analysis and any further litigation.

That seemed to me in my judgment it would not be of significant import.

Mr. Gore. The delay would not be of significant import?

Dr. Miller. Yes.

Mr. Gore. We had testimony from a mother and father in Hardeman County, Tenn. who gave birth to a little child whose stomach was outside of its body. They determined that during the pregnancy, the mother had been drinking water that had been polluted by some 16 million pounds of exotic chemical wastes dumped near their well.

Now, if a quicker regulation preventing that dumping had been in effect, it seems to me that would be of significant import to that child.

Dr. Miller. Well, the terrible thing is nothing can be done about the child's deformity.

Mr. Gore. But something can be done about those who will be deformed in the future.

Dr. Miller. That is right. My heart goes out to parents like that. I would have no reservation about the immediate application of an appropriate regulation in that circumstance.

Mr. Gore. Well, that is what we are talking about. You want a formal cost-benefit analysis before it goes into effect. Let me ask a question——

Dr. Miller. Could I just point out that many agencies presently have authority to issue temporary emergency standards?

Now, my requirement would not necessarily go to that. Then beyond the temporary emergency standard they issue a final standard, formal standard, and that is what I would apply my test to.

Mr. Gore. Let me ask you this.

What monetary value would you put on the avoidance of that child's deformity?

Dr. Miller. That is a very tough question. That is one of the subjective valuations the policymaker would have to make in a benefit-cost test.

Mr. Gore. Well, if you cannot evaluate properly that cost, then it seems very difficult to call for a strict arithmetical formula, and then ask that judicial review be applied to that formula.

Dr. Miller. Well, I didn't, Mr. Congressman, call for a strict arithmetic formula.

Mr. Gore. Maybe that is Dr. Weidenbaum that said that the benefits must exceed by $1 or more.

Dr. Weidenbaum. Well, I frankly didn't quite put it that way. In fact, in my——

Mr. Gore. That is what the Dole bill says. You support the Dole bill?

Dr. Weidenbaum. I haven't read the version that has been introduced.

Mr. Gore. Both of you—do you both support the Dole bill?

Dr. Miller. I do.

Dr. Weidenbaum. I am sympathetic to it. I have not seen the final version that has been introduced.

Mr. Gore. You will be supporting it, wouldn't you, doctor?

Dr. Weidenbaum. I rely very heavily on Dr. Miller's judgment in those matters.

Mr. Gore. Would you be willing to support it?

Dr. Weidenbaum. Let me urge——

Mr. Gore. Yes or no?

Dr. Weidenbaum. I rarely rule on hypothetical cases where I can avoid, not having read it——

Mr. GORE. That is fine, go ahead. How would you measure the avoidance of that birth deformity?

Dr. WEIDENBAUM. Very frankly, Mr. Chairman, as I have listened to the discussion here, what has come to mind are the cases of the reverse nature.

Mr. GORE. Of what?

Dr. WEIDENBAUM. Cases of the reverse nature, where hasty regulation resulted in death. Let me give you just one quick example. The Consumer Products Safety Commission——

Mr. GORE. Let me give you an opportunity to do that in a moment. I would first like to get an answer on the question.

Dr. WEIDENBAUM. Would you repeat your question.

Mr. GORE. What monetary value would you place on the avoidance of that child's birth deformity?

Dr. WEIDENBAUM. I never have in any of my calculations put a dollar sign on a human life. I think a life is precious.

Mr. GORE. What about a deformity?

Dr. WEIDENBAUM. What I do in terms of human life is to weigh in the balance the human lives that could be saved by using those same resources in a more cost-effective manner.

Mr. GORE. What dollar value would you place on the avoidance of that child's deformity?

Dr. WEIDENBAUM. I would not place a dollar value on it.

Mr. GORE. Well, then, how can one possibly call for a measurement of that benefit as against the cost of preventing the birth deformity?

Dr. WEIDENBAUM. In my statement I point out where we cannot put a dollar sign on the benefits, the need to develop a cost-effectiveness approach. That is, given a level of cost, what are the maximum number of lives saved or injuries foregone from Government action. That is how I proceed.

Mr. GORE. So in this instance that methodology would lead you to conclude that we certainly should have strong regulation of the dumping of hazardous wastes, and the only question left to resolve is how strong it should be and how it should be implemented.

Dr. WEIDENBAUM. Yes, sir, I concur with the greatest of enthusiasm with what you just said.

Mr. GORE. But then we will have to add that to the burden of Government regulation.

Dr. WEIDENBAUM. Yes, sir. And offset it with the benefits of that regulation, and from what you tell me, hopefully we will do that in a way that the benefits will far exceed the costs.

Mr. GORE. Well, now, how would you measure the disability of a coal miner for the rest of his life due to the wheezing and lack of breath and energy that comes from black lung disease?

Dr. WEIDENBAUM. You appreciate, Mr. Chairman, that we do not have a benefit-cost test in law. We do not have a formal organization in this Government or anywhere else, to my knowledge, to systematically develop ways of estimating the benefits and estimating the costs.

Mr. GORE. Well, would this also be an instance where since it is not given to a certain calculation the only question in your mind would be not whether we ought to have strong regulations on coal mines, but rather how they should be implemented?

Dr. **Weidenbaum**. Again, I concur very strongly.

Mr. **Gore**. What value would you place on the 28,000 work-related amputations last year?

Dr. **Weidenbaum**. I say, I would not presume to put a dollar sign on human life, on human suffering.

Mr. **Gore**. So in that instance also your question would not be whether or not we should have OSHA, but rather how strong the regulations should be and how they should be implemented.

Dr. **Weidenbaum**. I have acted accordingly. As you know, there is a stop OSHA movement. Many of my conservative friends belong to that. I sympathize with the organization, but I refuse to join the organization because I don't want to stop OSHA. I want to reform it so it does a better job.

I am appalled at the loss of life. I am appalled at the accidents and illnesses in both the public and the private sectors. I would reform OSHA so it does a better job, and I would extend its authority to include the public sector.

When I read about the tremendous hazards in Government agencies beyond the purview of OSHA, I think that, too, cries for reform.

Mr. **Gore**. Well, I respect and applaud your concern. But I am left with some puzzlement about the relevance of your effort to add up the costs of black lung, hazardous wastes, OSHA, and then say that this is a compelling argument to retrench on all of these.

Dr. **Weidenbaum**. It is a compelling argument to seriously evaluate the multiplicity of Government regulations. As I have written at length in my newest book, "The Future of Business Regulation," which just came out last month, I strongly believe that what Government does it should do very well.

Unfortunately, the Congress has put such burdens on the Government, on the executive branch, it cannot do well all of the massive array of functions that unfortunately you have assigned to them.

I am not here as a neanderthal. Anyone who tries to paint me that way can have lots of fun, but not much factual support.

Mr. **Gore**. Well, let the record reflect that I have no such purpose, and that I have——

Dr. **Weidenbaum**. I did not mean the chairman.

Mr. **Gore**. I think that you have clarified somewhat your intentions. Yet you still seem to have espoused a methodology that compels a reader that has no forewarning or deeper appreciation for what the concerns are that you feel in addition to this work, to the conclusion that we ought to eliminate hazardous waste regulations, that we ought to eliminate all of this OSHA stuff, and that black lung is a bad idea.

For example, let me give you an example of what I mean. When you attempt to assign a cost to the Occupational Safety and Health Administration, you relied heavily on the McGraw-Hill economic department survey. Are you familiar with how that survey is conducted?

Dr. **Weidenbaum**. It is a survey that the economics department of McGraw-Hill takes of a sample of American industry. Am I familiar with it in detail? No.

Mr. Gore. Do you know that they ask businessmen what they, the businessmen, plan to spend in the coming year on compliance with——

Dr. Weidenbaum. Surely, yes.

Mr. Gore [continuing]. With regulations? Is that a scientific way to calculate the costs of OSHA?

Dr. Weidenbaum. I would much prefer doing what I do in the EPA example, using the Government's own data. But OSHA has not developed its data.

Mr. Gore. Did you or the people at McGraw-Hill upon whom you relied make any attempt to separate expenditures that would have been made in any event, whether OSHA had been in existence or not?

Dr. Weidenbaum. I am not aware of that, but I am also aware that they do not include what must be large operating costs. These are just the capital expenditures to meet the OSHA requirements. There are not to my knowledge operating costs, no costs of personnel, of supplies to meet the OSHA requirements.

Dr. Miller. Mr. Chairman, I just thought of something that I must interject here because it just slipped my mind. You asked if I had once been a consultant, did I know something about the chemical industry. I really don't know very much.

You asked if I had ever been a consultant to the chemical industry. Not as an industry, but it just dawned on me that I did perform a benefit-cost analysis for the Vistron Corp. of the OSHA proposal for acrylonitrile. So that may have been the source of your reference. That is true. I am sorry.

Mr. Gore. And you testified on their behalf before OSHA during the spring of 1978?

Dr. Miller. Yes; I did. I am sorry. It slipped my mind.

Mr. Gore. That is all right. It happens all the time.

We have a vote on the floor. I know it has been a long day, but we have a little ground yet to cover. I beg your indulgence, ask your patience, and I will run over and come right back.

This is final passage of the military appropriations bill this year. I will be right back.

[Brief recess.]

Mr. Gore. The subcommittee will come back into order.

I hope we can wrap that up pretty quickly because I know the witnesses are at least as hungry as I am.

When we left, I think Mr. Green wanted to make a comment.

Mr. Green. I don't understand why Professor Weidenbaum is not ready to endorse the Dole bill. Educate me if I misread your prior writings, but I thought the whole purpose of much of your evidence and many of your earlier comments indicated support for a formal arithmetic cost-benefit test which had to be met before a regulation could be promulgated.

If you changed your mind about that, we should know it. But if that is the test you urge, what do you do if you are a regulator of a coke oven standard that costs us $1 billion and let's say it saves 1,000 lives.

You don't want to calculate the value of life, you have said. How does the regulator make the judgment on a cost-benefit test whether or not to promulgate the standard?

Aren't you admitting that it comes down eventually to the judgment of the regulatory whether or not 1,000 lives is worth $1 billion, regardless of your arithmetic cost-benefit test?

Mr. Gore. Dr. Weidenbaum?

Dr. Weidenbaum. That is a very fair question. In my writings, I urged the weighing of the benefits against the costs, and a benefit-cost test. But any time I have done a comprehensive statement, I have gone on to point out that where you cannot put a dollar sign on human lives, the benefits, that is where we need what the economist calls a cost-effective approach. That is why I show great concern over the actual draftsmanship of the bill.

Going back to my Treasury and Budget Bureau days, I have been involved in the drafting of a great many pieces of legislation, and I know it is a very difficult task, Mr. Chairman, to translate a general concept into specific workable law. In fact, that is at the heart of the problem we are discussing here, the well-intentioned programs translate so frequently, because of statutory deficiencies, into unworkable, ineffective programs.

I certainly do not want benefit-cost analysis to be used in that way, so therefore before I would officially, formally endorse and support a regulatory reform bill, and I have endorsed Senator Percy's, for example, sunset law, I carefully sit down and read and evaluate each and every provision of that proposed statute. It would be irresponsible of me, not having done that for Senator Dole's bill, to pass judgment on it today.

Mr. Gore. If I understand your answer then, you would not be in favor of utilizing a cost-benefit analysis in any case where the regulation in question involved health or safety.

Dr. Weidenbaum. I would not quite go that far.

Mr. Gore. Let me ask you then would you say that in any case where the potential harm to be avoided is a predictable increase in the rate of cancer, would you apply a cost-benefit analysis in that case?

Dr. Weidenbaum. Oh, yes.

Mr. Gore. What about amputations?

Dr. Weidenbaum. May I explain why I would do that in the case of cancer?

Mr. Gore. Yes.

Dr. Weidenbaum. And like Mr. Miller, I have had close relatives die of cancer.

Mr. Gore. I think we all have.

Dr. Weidenbaum. Of course. It is the second most prevalent cause of death, it is my understanding. When I look at the serious causes of cancer, and remote causes of cancer, and then relate that to Government action, that is what I find very frankly so upsetting and disconcerting. What is the leading cause of cancer in this country? It is not chemicals. It is cigarette smoking, and as we sadly know, our Government spends several hundred million dollars of our tax money subsidizing the growing of tobacco. At the same time very remote causes of cancer, .000, almost to infinity, like Monsanto's proposed coke bottle, that result in product banning. That misallocation of resources I think does this society very frankly a great disservice.

Mr. **Gore**. I think if you take a closer look at the cancer statistics, the salient point about lung cancer predominantly caused by cigarette smoking is that it is the only leading cancer group that is on the increase. The others are on a slight decline. But the first part of your response was that you would not apply a cost-benefit analysis in those instances where the avoidance of cancer was the benefit side of the equation.

Dr. **Weidenbaum**. I would, but you have to do that in the legislative process——

Mr. **Gore**. Would you or would you not apply a cost-benefit analysis where the avoidance of cancer is on the benefit side of the equation?

Dr. **Weidenbaum**. Here is what I would use. I would use a cost-effectiveness approach in the legislative process, so that we do not get statutes that virtually ignore major causes of these hazards and focus on the remote——

Mr. **Gore**. So you would not use a benefit-cost analysis where the avoidance of cancer was on the benefit side of the equation?

Dr. **Weidenbaum**. I would not get to that stage.

Mr. **Gore**. What health and safety regulations would be appropriate for using a cost-benefit analysis?

Dr. **Weidenbaum**. I would look at the job-safety program.

Mr. **Gore**. You said a moment ago that where amputations, where the avoidance of amputations was the benefit side of the equation, you would not use cost-benefit analysis there. What about asbestos workers, where the avoidance of lung disease——

Dr. **Weidenbaum**. Precisely. Asbestos is a fine example of the kind of analysis I have in mind.

Mr. **Gore**. Would you use cost-benefit analysis there?

Dr. **Weidenbaum**. Yes, but not with a dollar sign. May I illustrate how I would use benefit-cost analysis there, and I think because they have announced they are going to study the potential, the possible banning or limitation of the use of asbestos, here is the kind of analysis I would do. I would do it in steps.

Mr. **Gore**. Steps?

Dr. **Weidenbaum**. In sequence. The very first sequence I would look at is what are the costs of banning asbestos, what are the benefits of banning asbestos?

Mr. **Gore**. How do you quantify the benefits of banning asbestos?

Dr. **Weidenbaum**. The benefit of banning asbestos would be the number of people whose lives are saved or whose length of life is expanded by banning asbestos.

Mr. **Gore**. And what dollar value would you——

Dr. **Weidenbaum**. I would not put a dollar value.

Mr. **Gore**. Would you put a dollar value on the cost of banning asbestos?

Dr. **Weidenbaum**. No, sir.

Mr. **Gore**. Would you put a dollar value on the cost side?

Dr. **Weidenbaum**. No, sir.

Mr. **Gore**. You would not?

Dr. **Weidenbaum**. I would put people on both scales as follows. May I continue, because this is the heart of the matter. I am very well aware of the hazardous nature of asbestos in the workplace and elsewhere. But as a motorist who uses asbestos, who gets the benefit of asbestos every time I put my foot on the brake in my car, and the asbestos in those brake linings prevents me from hitting into your car, you and I are both, Mr. Chairman, in effect very well aware of the benefits of asbestos. Any analysis that would just look at the lives saved from banning asbestos without looking at the lives lost from banning asbestos would not benefit this society.

Mr. **Gore**. I am having a little difficulty in following that methodology. You are assuming, are you, that any regulation of the exposure of workers to asbestos would necessarily result in the removal of all asbestos from brake linings, or the prevention of its use for that purpose in the future?

Dr. **Weidenbaum**. I am saying if someone presented—and apparently that is one of the things under consideration in this Government—a proposal to ban asbestos, the way I would do a benefit-cost analysis of a proposed ban of asbestos is to look at——

Mr. **Gore**. No; we are talking about the job safety. We are focusing on job safety.

Dr. **Weidenbaum**. That is right.

Mr. **Gore**. With specific regard to asbestos.

Dr. **Weidenbaum**. That is my point.

Mr. **Gore**. And you are taking on one side of the equation the number of people whose lives would be saved or whose lives would be lengthened, but then on the other side of the equation I do not see the relevance of the number of people whose lives would be saved by virtue of you not running into them because your car did not have asbestos brake linings. How does the regulation to protect the workers from getting lung cancer prevent the use of asbestos in brake linings?

Dr. **Weidenbaum**. If you are not going to be able to manufacture the asbestos, you are not going to be able to put the asbestos into your brake linings.

Mr. **Gore**. So you are making that assumption that any regulation would prevent the continued manufacture of asbestos products.

Dr. **Weidenbaum**. Mr. Chairman, I am saying should a proposal be made to ban asbestos, here is how I would do the benefit-cost analysis.

Mr. **Gore**. No; I am not talking about a proposal to ban asbestos. I am talking about a proposal to regulate the workplace in which asbestos products are made.

Dr. **Weidenbaum**. OK.

Mr. **Gore**. Now is a cost-benefit analysis appropriate there?

Dr. **Weidenbaum**. Yes.

Mr. **Gore**. You have said no.

Dr. **Weidenbaum**. In this case I would say yes, but with people on both sides of the scale.

Mr. **Gore**. All right. Now in that case, 2.2 million people will die of occupational exposure to asbestos, of those people who have been exposed since approximately 1940, according to a report of three of the National Institutes of Health, of three National Institutes of Health——

Dr. **Weidenbaum**. I would question the report.

Mr. **Gore**. Pardon me?

Dr. **Weidenbaum**. I would not take that report at face value. I have seen too many overestimates in that area.

Mr. **Gore**. The years include the World War II years in which so many people were exposed to asbestos in the shipbuilding industry; but you are personally free to question those figures. Perhaps they have some weakness.

Assume for the moment that there are at least 1 million people. Let us divide that number in half, or more than that. Let us assume that 1 million people will die from workplace exposure to asbestos. You decline to put a dollar value on their lives; is that correct?

Dr. **Weidenbaum**. Yes, sir.

Mr. **Gore**. Then how do you then say that you would recommend a cost-benefit analysis of a regulation which is designed to prevent that from happening? How do you say that you would recommend a cost-benefit analysis if you cannot put a dollar value on the lives saved?

Dr. **Weidenbaum**. I do not think that dollars are nearly as crucial as people.

Mr. **Gore**. But you just said that you would recommend a cost-benefit analysis.

Dr. **Weidenbaum**. Yes.

Mr. **Gore**. Of a regulation designed to limit or prevent exposure to asbestos in the workplace.

Dr. **Weidenbaum**. Cost——

Mr. **Gore**. Did you not say that?

Dr. **Weidenbaum**. Cost. I did not say dollars. I said cost, Mr. Chairman, and benefits, Mr. Chairman.

Mr. **Gore**. Let me ask you.

Dr. **Weidenbaum**. The most appropriate measure of benefits and costs is people.

Mr. **Gore**. Let me ask you the question again, Doctor. Would you recommend the use of a cost-benefit analysis with regard to a regulation to limit exposure in the workplace to asbestos?

Dr. **Weidenbaum**. Yes, sir.

Mr. **Gore**. How can you do that if you cannot assign a dollar value to the lives saved?

Dr. **Weidenbaum**. By looking at the difference in lives in the workplace with and without that standard, and a difference in lives among the users, the potential users of that product with and without the standard. Otherwise your analysis is incomplete.

Mr. **Gore**. Do you think that can be done? Do you think that kind of analysis can be done with relative certainty?

Dr. **Weidenbaum**. I will give you an example.

Mr. **Gore**. And would you require that kind of analysis before we implemented any regulation to prevent or limit the workplace exposure to asbestos?

Dr. **Weidenbaum**. Yes; I would.

Mr. **Gore**. How would you quantify the number of people whose lives are saved by not having any limitation of workplace exposure to asbestos?

Dr. **Weidenbaum**. I do not pose—there is no one person in this society who is expert in every field of analysis, but let me give you——

Mr. GORE. Can that be done? Can you measure the number of people whose lives will be saved by not limiting workplace exposure to asbestos?

Dr. WEIDENBAUM. Mr. Chairman, I pose as no expert on——

Mr. GORE. Yes or no? Is that a possible test?

Dr. WEIDENBAUM. Is it possible? Yes, and let me show you how this kind of analysis has actually been done.

Mr. GORE. OK.

Dr. WEIDENBAUM. The subject is nitrites in meat. On nitrites in curing——

Mr. GORE. No; I am talking about this. How would you do it?

Dr. WEIDENBAUM. By the methodology in the nitrite case.

Mr. GORE. I want to know the methodology that you would use in this instance.

Dr. WEIDENBAUM. If there is anything that I have learned over the years, it is not to rediscover the North Pole, Mr. Chairman.

Mr. GORE. You are saying——

Dr. WEIDENBAUM. The methodology has been developed elsewhere that is relevant; I would use it.

Mr. GORE. Wait a minute, here we have 2.2 million for the sake of argument, and we have cut it down to 1 million people who will die prematurely from this exposure, and yet you would prevent any effort to limit that exposure and avoid future deaths until you could require the performing that analysis, and I have asked you to give me some indication of how you would proceed in performing that analysis, and specifically you have already conceded that you cannot put any dollar value——

Dr. WEIDENBAUM. Oh, I did not say I could not. I would not. I did not say could not, I would not.

Mr. GORE. All right, and you have taken refuge instead in an effort to balance people on one side and people on the other, and we have assumed 1 million people will die, and I am asking you specifically how in the world are you going to, with any accuracy, arrive at the number of people whose lives will be saved because we do not limit the exposure of workers to asbestos on the job?

Dr. WEIDENBAUM. Mr. Chairman, quite clearly no one person, myself included, can give you off the top of his head a benefit-cost analysis of every regulatory program. But I can, if you will permit me, if you will give me 2 minutes, I can show you how this was done, and properly.

Mr. GORE. Fine, go ahead.

Dr. WEIDENBAUM. In the case of nitrites quite clearly there is a carcinogenic hazard in the use of nitrites in curing meat. The benefit of eliminating nitrites——

Mr. GORE. Wait a minute, we are not eliminating asbestos.

Dr. WEIDENBAUM. This is the methodology.

Mr. GORE. But the methodology does not apply. We are not eliminating asbestos in this hypothetical example. You are saying no limitation of exposure to asbestos until we perform this cost-benefit or cost-effectiveness analysis, and I am suggesting to you that it is impossible to come up with a figure that has any kind of accuracy whatsoever that would measure the number of people whose lives would be saved by not limiting the exposure of workers to asbestos in the workplace. Now you are jumping to the conclusion that this effort would automatically result in the complete elimination of all asbestos products. That is why you turned to the nitrite example, but it does not apply. I am asking for a more subtle cost-effectiveness analysis, one that is so subtle that I am suggesting it cannot be made. Yet you would require it before these people who are exposed to asbestos would get any kind of protection whatsoever from the Government.

Dr. **Weidenbaum**. Mr. Chairman, I insist the point I am making is not that farfetched, that you will in the coming year be faced with a situation where OSHA is considering banning asbestos in the workplace because of the carcinogenic hazard. That is not that farfetched.

Mr. **Gore**. That is your hypothetical and not the one which I am asking you to address. I would suggest that the one I am asking you to address has far more widespread application.

Dr. **Weidenbaum**. Fine.

Mr. **Gore**. Most of these regulations are the kind of this hypothetical.

Mr. **Green**. Can I inject one sentence?

Mr. **Gore**. No; I would like to give Dr. Weidenbaum an opportunity to respond, and then I will recognize you, Mr. Green.

Dr. **Weidenbaum**. On the one hand, you are not talking about banning.

Mr. **Gore**. Limiting exposure.

Dr. **Weidenbaum**. You are just talking about limiting exposure, so you will not eliminate all of the carcinogenic hazard. You will just reduce it. That would be the legitimate benefit of the proposed regulation.

Mr. **Gore**. How do you measure it?

Dr. **Weidenbaum**. I would let others do that, but on the cost side——

Mr. **Gore**. Are you saying that you cannot?

Dr. **Weidenbaum**. I do not pose as an expert on asbestos.

Mr. **Gore**. You are proposing that it be required before any protection be extended by the Government. It seems to me that if you are making that proposal, you have an obligation to the people who would otherwise be affected to the extent of losing their lives or having occupational diseases, you have an obligation to them to at least give some indication that it can be done.

Dr. **Weidenbaum**. Mr. Chairman, for any person on any issue of legislation, I have testified before congressional committees for 22 years, for any one person to be forced to say he is the expert or an expert or an authority on every aspect of any item——

Mr. **Gore**. I did not intend my question to be so demanding. I am just looking for some indication.

Dr. **Weidenbaum**. Allow me.

Mr. **Gore**. That it is at least possible, and I am not getting at the indication that it is possible.

Dr. **Weidenbaum**. If you will permit me, Mr. Chairman, the experts, and in NIOSH supposedly they exist, otherwise they would not be doing the work for the standard. In NIOSH I assume there will be adequate estimates of the reduced exposure to this carcinogen from the proposed standard. On the other side of the equation is the reduced production of asbestos, and the harm that may be done to the users by not having available asbestos to protect the users.

Mr. **Gore**. In numbers of lives saved?

Dr. **Weidenbaum**. Yes.

Mr. **Gore**. Do you think that can be accurately calculated?

Dr. **Weidenbaum**. That is the challenge that I would put to a regulatory agency.

Mr. **Gore**. And you would put that challenge to them and require them to meet that challenge before they could protect the people exposed in the workplace?

Dr. **Weidenbaum**. If they——

Mr. **Gore**. Even though you are not sure whether they can meet that challenge?

Dr. **Weidenbaum**. Mr. Chairman, we would have many more deaths from botulism if the FDA did not hold back on the nitrite case, because they are aware that on the one hand we have carcinogenic hazard, but on the other hand we save far more people from botulism.

Mr. **Gore**. I would agree with you that in some instances Government regulators make wise decisions, and they are not always insensitive.

Dr. **Weidenbaum**. Agreed.

Mr. **Gore**. Now whether or not that instance was—I myself tend to think that that is an example which is rather extraordinary. Let me come back and tie down one point on your methodology, because I think it is important. You would not apply cost-benefit analysis prior to the imposition of regulations in any case where health or safety was involved, but rather you would require a people-to-people comparison, and the health benefits or the lives saved on the one side, versus the health benefits or the lives saved on the other; is that correct?

Dr. **Weidenbaum**. That is not quite the way I would put it in.

Mr. **Gore**. In which health and safety instances would you require a strict cost-benefit analysis?

Dr. **Weidenbaum**. I would put the onus on the agencies.

Mr. **Gore**. No, no; wait a minute.

Dr. **Weidenbaum**. Where they do a benefit cost——

Mr. **Gore**. Wait a minute, in which ones would you require a strict cost-benefit analysis?

Dr. **Weidenbaum**. I would urge you not to be that specific in the statute.

Mr. **Gore**. Laws unfortunately have to be relatively specific. We cannot pass laws saying do what you want to and use your own judgment, do the best you can.

Dr. **Weidenbaum**. Unfortunately, that has happened on too many occasions; I agree with the chairman.

Mr. **Gore**. I think I left myself open for that one.

In which instances would you require a strict cost-benefit analysis in health and safety? You would not say?

Dr. **Weidenbaum**. I would give the following mandate to each regulatory agency: Wherever possible estimate the benefits. Estimate the costs. Look for least-cost solutions. Where it is not feasible to put a dollar sign on the benefits, use a cost-effectiveness approach.

Mr. Gore. I think I can endorse that. I think I can introduce that bill.

Dr. Weidenbaum. Fine.

Mr. Gore. I do not see any problem with that.

Dr. Miller. Will you cosponsor the Dole bill?

Mr. Gore. No; the Dole bill does not do that. The Dole bill does not do that at all. The Dole bill says where the dollar value of the cost is more than the dollar value of the benefits, the regulation cannot be invoked; is that not what it says?

Dr. Miller. Congressman Gore, you are much closer to it than I am, but the copy I read or the draft that I read I do not think contained that precise wording, and also I responded in my letter and indicated of course that there would have to be areas where a certain amount of discretion and reasonable judgment would have to be exercised.

I should amend what I say about endorsing the Dole bill with a caveat that I am not an attorney and I cannot predict precisely what happens, but my endorsement——

Mr. Gore. You have not had second thoughts during today's testimony?

Dr. Miller. No; I am just trying to make a point of clarification.

Mr. Gore. I see.

Dr. Miller. I will be glad to send you a copy for the record if you would like, a copy of the letter I returned to Senator Dole, but my endorsement of the Dole bill is not to say that I think that is the specific form that Congress should pass. Obviously there are some things in the bill I just do not understand because I am not a lawyer. There may be provisions in there, just errors or something like that. The basic thrust, as I outline the basic thrust, the contents of the Dole bill—in an article I published in Regulation magazine, the very first issue—I would be glad to make available a copy of that, if you like. It is the thrust of the thing, and it incorporates in my judgment, or at least I am assuming that it allows for the kind of expansive definition of benefit cost that I have tried to explain before the committee.

Could I just make a couple of points?

Mr. Gore. Sure. I am going to come back to Mr. Green. I cut him off a minute ago. You go ahead, Mr. Green.

Mr. Green. They are making my points better than I am, Mr. Chairman.

Dr. Weidenbaum. This is personal. When this hearing was shifted——

Mr. Gore. What?

Dr. Weidenbaum. When this hearing was shifted from yesterday to today, it got me in a position where I have a 3 o'clock flight, and am giving a 4 o'clock lecture in New York City.

Mr. Gore. I understand. We are going on a long time.

Dr. Weidenbaum. I would be delighted, in fact I would welcome an opportunity to submit for the published hearing any answers to any additional interrogatories.

Mr. Gore. All right. Without objection, we will leave the record open. I wonder if you would be willing to respond to some further questions in writing.

Dr. Weidenbaum. Yes.

Mr. Gore. I had a number of questions about the inclusion of the Patent Office and the copyright.

Dr. Weidenbaum. And I would be delighted to come back on another day if you would like me to, Mr. Chairman.

Mr. Gore. The Library of Congress, Bureau of Alcohol, Tobacco, and Firearms.

Dr. Weidenbaum. I would be delighted to come back on another day if you would like. Thank you for the courtesy.

Mr. Gore. For the benefit of the witnesses, we are going to end briefly. Let me thank you for joining us, Doctor. Thank you very much.

Dr. Miller.

Dr. Miller. Yes, sir. In this colloquy that got rather heated, it seems to me that we ought to keep in mind that agencies do make these tradeoffs today. They do have a benefit-cost test.

Mr. Gore. Yes.

Dr. Miller. It is an implicit one, and all I am trying to suggest is that they make it in an intelligent manner.

Mr. Gore. Yes.

Dr. Miller. And that they make how they weigh these things a matter of public record, and that seems to me very important.

The second point, and it follows up on what Professor Weidenbaum is saying, is that resources are limited. Resources are not free. If you are able to reduce exposure and to reduce the probability of death or accident in one area, it means you have less resources to spend, to utilize, in another area, and so the cost-effectiveness on this point is trying to reduce or minimize the cost of a given regulatory objective or trying to maximize the regulatory objective for a given cost. Now the little piece that I did that escaped my memory, and I again apologize to you for, contains I think a fairly good discussion on how one goes about trying to make some determination of whether a particular proposal is reasonable or unreasonable, and one thing it does is that it looks to what other agencies, how other agencies are allocating resources as to how far they go with respect to lifesaving or activities that reduce the probability of loss of life or of accidents. But that is the kind of investigation that needs to be done, and it seems to me reflecting back on the point that Mr. Green raised about the aggregate benefits, this is an area where more work needs to be done, but my saying that more work work needs to be done is not to say that I would not at this point endorse a requirement that agencies be required to show the benefits.

Mr. Gore. I would say that the one would give me no problem. I think that clearly agencies, and the Congress in overseeing agencies, and the Congress in using tools such as the ones that Mr. Green has not, but some of us do see some merit in, should pay close attention to the burdens imposed on industry, and should try to get the best regulations possible, to try to avoid nonsensical, repetitive regulations that do not meet a cost-effectiveness standard, but I think there is a lot of difference between that and designing some arithmetical standard that seeks to put a dollar figure on human life and health and environmental damage, and then requiring that that formula be satisfied, and pretending that it can be done in the first instance, and in the second instance requiring that it be satisfied before any kind of regulation can be put into effect. I think that they are two entirely different instances.

Dr. Miller. Congressman, I really do not think that we are that far apart as far as my personal position and the one you just articulated.

Mr. Gore. Perhaps not.

Dr. Miller. Could I just mention one other thing, and that is to stress the point at the very end of my prepared statement, and that is that all institutional arrangements are imperfect. It seems to me the question is whether we can improve significantly the performance of our regulatory agencies by adopting such an approach, not whether such an approach has imperfections.

Mr. Gore. Mr. Green.

Mr. Green. Jim, you said you and the chairman may not be far apart, but the Ribicoff regulatory analysis proposal which we support, is miles different than the Dole bill, which requires a mathematical cost-benefit test, and some day you and Professor Weidenbaum will have to choose between the two, as Congress will.

Just to close, Mr. Chairman, you have accomplished after an hour of probing questions what I have never been able to accomplish debating Professor Weidenbaum long-distance. He has repeatedly advocated before today at 1 o'clock that there should be a mathematical cost-benefit test where the burden is on the Government to prove that the benefits exceed the cost. He has today implicitly acknowledged that you cannot convert his rhetoric into law. When all is said and done, after all his lengthy explanations to you, he will not or cannot answer the hypothetical question that if *x* regulation costs $1 billion and it nets 1,000 lives saved, which takes into account asbestos brake linings, does the regulator then regulate or not? Ultimately it is a question of judgment, which is what we who support health-safety regulations have always said. He has previously said that it should be a matter of mathematical certainty—I am glad to see he has backed off on that today, and I hope he does not endorse the Dole bill.

Mr. Gore. I would like to give the three witnesses an opportunity to make any other statements. Yes, Dr. Ferguson.

Dr. Ferguson. I would just like to say two or three things. One, I very much agree with what Mark has just said about the dangers of appearance of agreement. I was a negotiator for the United States for some years, and deduced the conclusion that in international affairs, where there was agreement, there had been a failure to communicate, and I think that that is part of the problem here.

I think there remain important issues. I think that any notion that legislation should require any kind of statement that benefits exceed costs as if they could be commensurate is entirely misplaced.

That does not mean that we shouldn't look at what is good and what is bad, and go as far as we can in toting them up. But the idea of having such a statute, the idea of making such actions subject to court review on the substance seems to me to be outrageous.

The benefits—and the costs as well as the benefits—cannot be estimated with precision. Both of them are dealing with future events. Both of them are replete with uncertainty in all the health and safety and environmental areas.

So to put the courts in a position of second-guessing the imperfect expertise of regulators is at least ludicrous.

I would in a more complete summary go back over the things that need to be done to make a sensible use of benefit cost assessment in all of its various broad characteristics. There is a lot that needs to be done before unbiased benefit cost analysis, by any definition, can in fact be implemented.

Mr. **Gore**. Thank you very much, Dr. Miller.

Dr. **Miller**. I guess I respond to that with just noting that Dr. Ferguson and I have a difference of opinion.

My reason for recommending that benefit cost requirement be subject to judicial review is not a feeling that one should interpose the judgment of the judiciary for the judgment of the regulators.

In fact, I have some colleagues at AIE who are quite aghast at the thought of placing additional burdens on the judiciary and giving them more say-so in public policy.

But the reason for doing that is quite a simple one. Maybe I am in error in this, or my judgment is wrong on this, but it comes from my experience in the Council on Wage and Price Stability, where it is very difficult to get—where my experience suggests it is very difficult to get Government agencies to change their behavior without subjecting their decisions or their behavior to judicial review.

It is just very difficult to get them to perform such analyses and to have such analyses of even the rudimentary quality that anyone could expect. That is the reason—it is not to have the court interpose its judgment.

Again, my point would be, it is my prediction—and maybe I am wrong in this, and there are plenty of experts who know far more about this than I do—that what would happen is very quickly the courts and the agencies would reach an accord.

The agencies would very quickly find out what it is that they would have to do in order not to be struck down by the courts, and the courts would very quickly determine the requirements the agencies have to meet.

There would not be a substantial amount of litigation.

Mr. **Gore**. You have something else? You guys have to be getting hungry.

Dr. **Ferguson**. Yes; we are always hungry.

Dr. **Miller**. Mean and hungry. Some more mean than others.

Dr. **Ferguson**. Some more hungry than others.

I would not in advance see anything wrong with a court review on the grounds of procedure. The courts have so much difficulty in dealing with uncertainty alone, that I think court review on the substance just would be as bad as I said a minute ago.

Mr. **Gore**. Let me close by expressing the thanks of both subcommittees for your patience throughout a very long day. I think it has been very productive, very interesting, useful analysis of these two studies.

The appreciation of all the members of both subcommittees is extended to you who have been so patient and contributed so much to this hearing.

Thank you very much. The hearing is adjourned.

[Whereupon, at 2:35 p.m., the joint subcommittees adjourned.]

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